United States Agency For International Development

Initial Environmental Examination

of the

Tarin Bridge Project

A part of the Afghanistan Rehabilitation of Economic Facilities and Services (REFS) Program

Contract 306-C-00-02-00500-00

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ACRONYMS/GLOSSARY

LIST OF ACRONYMS/GLOSSARY

A

AASHTO	American Association of State Highway and Transportation Officials
ACCA	Afghan Assistance Coordination Authority
ACIA	Afghanistan Civil Infrastructure Assessment
ADB	Asian Development Bank
AIA	Afghanistan Interim Administration

B

BOD	Biological Oxygen Demand

C

CAWSS	Central Authority for Water Supply and Sewage
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
COPA	Conditions of Particular Application
CSC	Construction Supervision Consultant

D

DACAAR	Da Afghanistan Breshma Moassesa (Afghanistan Electrical Utility)
dB	Decibel
DO	Dissolved Oxygen

E

EA	Environmental Assessment
EIA	Environmental Impacts Assessment
EIRR	Economic Internal Rate of Return
EU	European Union

F

FIDIC	*Federation International Des Ingenieurs Conseils* (International Federation of Consulting Engineers)

G

GC	General Contractor
GCOC	General Conditions of Contract
Gozar	Neighborhood
GoA	Government of Afghanistan
GPD	Gross Domestic Product
GPS	Global Positioning System

H

Ha	Hectare

I

ICB	International Competitive Bidding
IDA	International Development Association
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IMF	International Monetary Fund
ISAF	International Security Assistance Forces
ICUN	International Union for the Conservation of Nature

J

K

KM	Kilometer

L

LCB	Local Competitive Bidding

M

MHBTP	Ministry of Housing, Building and Town Planning
Mirab	Water Master
MIWRE	Ministry of Irrigation Water Resources and Environment
MMI	Ministry of Mines and Industry
MOC	Ministry of Communications
MOI	Ministry of Interior
MOIC	Ministry of Information and Culture
MOP	Ministry of Power
MPW	Ministry of Public Works
MSL	Mean Sea Level

N

NGO	Non-Governmental Organization
NMT	Non-Motorized Traffic
NO	Nitrogen Oxide

P

Pb	Lead
PCF	Post Conflict Fund
PAP	Project Affected Person

R

REFS	Rehabilitation of Economic Facilities and Services
ROW	Right of Way

S

SE	Supervising Engineer
Shura	District (typically 15-20 *gozars*)
SPM	Suspended Particulate Matter
SS	Suspended Solids

T

TOR	Terms of Reference
TSP	Total Suspended Particulate

U

UN	United Nations
UNDP	United Nations Development Fund
UNEP	United Nations Environment Program
UNMAC	United Nations Mine Action Center
USAID	United States Agency for International Development
USAID/GC	USAID General Contractor
UXO	Unexploded Ordnance

V

VOC	Vehicle Operating Cost

W **X**

Y **Z**

INITIAL ENVIRONMENTAL EXAMINATION
Of The Proposed:
TARIN BRIDGE PROJECT
Proposed As Part Of The
REHABILITATION OF ECONOMIC FACILITIES AND SERVICES (REFS) PROGRAM
With Funding Provided By
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
Contract 306-C-00-02-00500-00
November 2003

Summary of Findings

Proposed Action. The United States Agency for International Development (USAID) proposes to fund the Tarin Bridge Project as a part of its Afghanistan Rehabilitation of Economic Facilities (REFS) Program. The Project will complete a bridge partially constructed prior to the collapse of the Taliban regime. The partially completed bridge is located in the Deh Rawod District of Uruzgan Province, approximately 150 kilometers north of Kandahar. Completion of the bridge will provide a two lane roadway plus 0.6 meters for a sidewalk and railings. Once completed, the bridge will accommodate traffic between the northern and southern portions of the province and facilitate commerce within Uruzgan Province and beyond.

Examination Methodology. Pursuant to Environmental Procedures established by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216), USAID made a *Positive Determination* for REFS Component 1 (the Component of with the proposed Project is a part), i.e., a determination that environmental documentation will be required on a project-by-project basis. The Determination noted that "*Not all infrastructure activities financed under Component 1 will require (a full) Environmental Assessment. The Contractor shall conduct environmental screening to identify and document those infrastructure activities that are smaller in scale and lower in risk. For these activities, the Contractor shall prepare environmental guidelines that will be used to minimize and mitigate potential environmental impacts. Included in the guidelines will be an environmental mitigation checklist to be completed as a part of final design for each project…. The guidelines will also describe procedures for monitoring construction activities to assure that identified mitigation measures have been implemented as planned" (*USAID Environmental Threshold Decision, REFS Program, 24 October 2002). The Initial Environmental Examination (IEE) has been structured to provide the required guidelines and to provide the procedural documentation to support a project-level Threshold Decision (i.e., a determination whether a full project-level EA is or is not warranted) based on environmental screening criteria pursuant to the requirements of 22 CFR 216 and other environmental considerations.

Findings and Recommendations. The IEE recommends a determination that an EA is not warranted, provided that the recommended environmental guidelines (incorporating a checklist for use as a part of final Project design and a recommended monitoring program) are adopted. To facilitate the adoption the IEE provides:

- Recommended Environmental Contract Provisions (**Appendix A**); and
- Guidelines for the compensation of project-affected persons (PAPs) for use in the event that unexpected impacts are encountered (**Appendix B**).

The IEE also recommends actions beyond the scope of the Project, but within the scope of the REFS Program, specifically:

- **Assist in the Establishment of a Traffic Safety Program**. Initiatives in this area are recommended for consideration as part of REFS Component 2.

- **Assist Coordination of Future Land Use & Transport Plans.** The long-term impacts of construction projects could be more significant than the short-term impacts of the construction period and are largely beyond the scope of the Project. REFS Component 2 can assist in the inter-governmental action necessary to monitor these impacts and ensure that they are adequately managed in concert with other concerned agencies.

- **Integrate REFS Institutional Strengthening Initiatives.** REFS Component 2 offers an opportunity to provide the necessary institutional initiatives.

- **Coordinate with Other Financing Organizations**. Related programs such as the World Bank's Emergency Infrastructure Reconstruction Project (EIRP) offer opportunities for integrated development and maximization of potential benefits.

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 PURPOSE OF THE IEE

This document presents an Initial Environmental Examination (IEE) of the Tarin Bridge Project (the Project) proposed for funding by the United States Agency for International Development (USAID) as part of its Afghanistan Rehabilitation of Economic Facilities and Services (REFS) Program. The purpose of the IEE is to ensure that environmental issues have been foreseen in its development and implementation plans. The administrative and strategic context provided by the REFS Program is explained in **Item 1.2** below. Details of the proposed Project are provided by **Section 2.0**, Project Description.

To ensure that environmental issues associated with projects such as the Tarin Bridge are adequately foreseen, all projects identified for funding by USAID are subject to the Environmental Procedures established by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216). Unless they are categorically excluded as a meeting established criteria (including a criterion which states that the project "*does not have an effect on the natural or physical environment*"), all projects require the preparation of an IEE and/or an Environmental Assessment (EA).[1] The intent of the IEE is to allow a "Threshold Decision" defined by the regulations as a "*formal Agency decision which determines….whether a proposed Agency action is a major action significantly affecting the environment*" and, therefore, requires preparation of an EA (referred to as a " Positive Determination"); or, conversely, finds the data and safeguard commitments provided by the IEE are sufficient to conclude the contrary i.e., a finding that there is sufficient analysis to conclude that the Project will not have an adverse effect on the environment (referred to as a "Negative Determination"). A Negative Determination allows the project to proceed without further environmental investigation except as may be noted in the conditions of the determination. The IEE step is not always necessary. Certain categories of projects are generally deemed to have a significant effect on the environment may proceed directly to the preparation of an EA. For all other projects, however, and for projects generally deemed to have a significant effect but for which the originator of the project "*believes that the project will not have a significant effect on the environment*", preparation of an IEE is an essential step in the project approval process.

The Tarin Bridge Project, like any construction project, will have some effect on the physical and natural environment and does not qualify for a categorical exclusion. The IEE as documented herein, however, indicates that:

- These effects of the Project will be overwhelmingly beneficial;
- The Project will not be undertaken in a highly sensitive environment that would raise concerns to a level requiring the preparation of an EA (as documented by **Section 3.0**, Environmental Screening);
- The potential less-than-significant adverse impacts generally associated with rehabilitation projects can be avoided through the provisions stipulated herein (**Section 4.0**, Environmental Guidelines); and
- A Negative Determination with Conditions is recommended (**Section 5.0**).

1 Projects having as potential for impact on the global environment or outside the jurisdiction of any country may require the preparation of an Environmental Impact Statement as defined by the National Environmental Policy Act. None of the actions discussed herein fall within this definition.

Details are as follows.

1.2 ADMINISTRATIVE & STRATEGIC CONTEXT

The REFS Program of which the Tarin Bridge is a part was developed on the basis of an Afghanistan Civil Infrastructure Assessment (ACIA) for which field investigations were undertaken in the period from 13 June to 18 July 2002 and documented by a Final Report to USAID/Afghanistan on 20 August 2002. The purpose of the ACIA was to identify and prioritize Afghanistan's civil infrastructure and its reconstruction, repair and rehabilitation needs and the need for agricultural market centers. The ACIA recommended a prioritized program for:

- Labor-intensive inter-provincial road rehabilitation projects;
- Development of rural market centers;
- Major roads and bridge projects;
- A National Secondary Roads Program; and
- A National Primary Roads Program.

The REFS Program was developed on the basis of the ACIA specifically "*to promote economic recovery and political stability in Afghanistan by repairing selected infrastructure needed to lower transportation cost, improve the provision of water and sanitation services, increase access to education, health and local government facilities, restore electrical transmission and distribution systems, and repair/reconstruct irrigation systems, dams/diversions and canals critical to the reactivation of the agricultural sector, the dominant means of livelihood in the country.*"[2]

To achieve these goals, the REFS Program consists of three components:

- Rehabilitation and Construction Projects (Component 1);
- Institutional strengthening of selected public services (Component 2); and
- Purchase, importation and distribution of construction materials and supplies not otherwise available in Afghanistan (Component 3).

In accordance with its internal procedures and in accordance with the regulations as outlined above, USAID made a Positive Determination for REFS Component 1, i.e., a determination that environmental documentation will be required on a project-by-project basis for projects involving civil works. Component 2 was determined to warrant a Categorical Exclusion, i.e., a determination that the component meets the pre-established criteria rendering an EA unnecessary. A Negative Determination with Conditions was made in regard to Component 3, i.e., a determination that, after due consideration, an EA is unnecessary for this component.

In regard to the Component 1 activities the Determination specifically noted that "*Not all infrastructure activities financed under Component 1 will require an Environmental Assessment. The Contractor shall conduct environmental screening to identify and document those infrastructure activities that are smaller in scale and lower in risk. For these activities, the Contractor shall prepare environmental guidelines that will be used to minimize and mitigate potential environmental impacts. Included in the guidelines will be an environmental mitigation checklist to be completed as a part of final design for each project. Where the analysis indicates that negative environmental effects could occur, the project will be designed to avoid or mitigate those effects. The guidelines will also describe procedures for monitoring construction activities to assure that identified mitigation measures have been*

2 REFS Contract, page C-2.

implemented as planned".[3]

The IEE provides the required screening in regard to the Tarin Bridge Project in **Section 3.0**. The recommended environmental guidelines are presented in **Section 4.0**. Based on these findings and application of the guidelines, it has been concluded that the IEE leads to a Negative Determination i.e., that the preparation of an EA is not required provided that the recommendations presented herein are incorporated in the Project. The conclusion and its rationale are presented in **Section 5.0**.

1.3 ORGANIZATION OF THE IEE

The IEE is organized as follows:

- **Section 1.0: Introduction.** The section in hand provides introductory information.

- **Section 2.0: Project Description**. Section 2.0 presents details of the proposed Project and a description of the existing environmental policies and procedures in Afghanistan.

- **Section 3.0: Environmental Screening**. Section 3.0 presents relevant environmental criteria as identified based on USAID regulations, and additional environmental considerations and issues associated with rehabilitation projects and the specifics of the Tarin Bridge Project. The discussions of the criteria present statements of:

  - Existing Conditions;

  - Potential Impacts and Anticipated Design Avoidance/Mitigation Actions; and

  - Additional Recommendations.

- **Section 4.0: Environmental Guidelines**. The Environmental Guidelines presented in Section 4.0 present:

  - A Recommended Checklist - Completion of the Checklist is recommended as a part of final Project design; and

  - Recommended Monitoring.

- **Section 5.0: Recommended Threshold Decision**. Section 5.0 recommends a determination that the preparation of an EA is not warranted based on the data and rationale presented therein.

3 USAID Environmental Threshold Decision, REFS Program, dated 4 September 2002, signed 24 October 2002.

2.0 PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

The site of the Tarin Bridge is located between the villages of Tor Nasser and Miandow in Deh Rawod[1] District (Uruzgan Province) at the GPS coordinates of latitude N 32° 37.977' longitude E 65° 29.744'. The Bridge is situated at an elevation of approximately 1,200 meters above mean sea level (msl). The surrounding landscape is relatively flat and featureless. **Exhibit 2-1** illustrates the location of the Project within the context of the REFS Irrigation and Bridge Project. **Exhibit 2-2** indicates the Projects location within the Uruzgan Province.

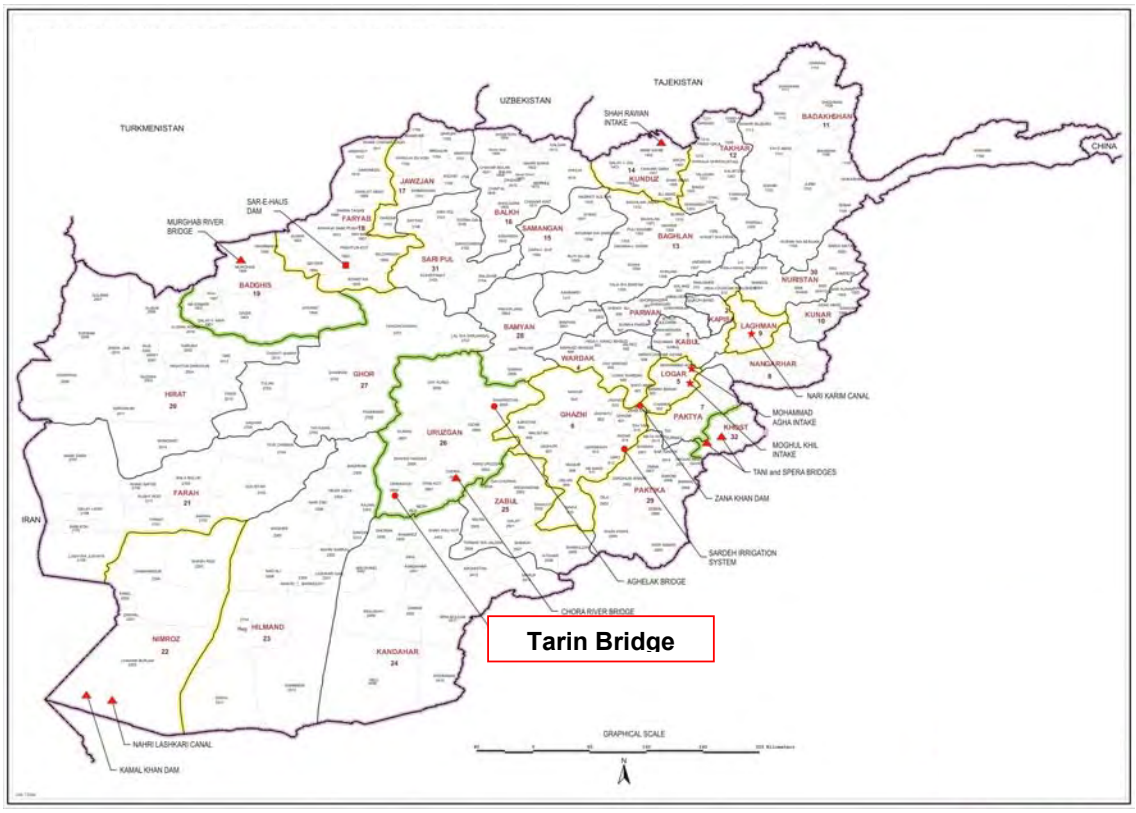

EXHIBIT 2-1. REFS IRRIGATION AND BRIDGE PROJECTS

The Project will complete construction of a partially completed bridge designed by a Pakistani engineering firm in 1999, construction of which was initiated by the Taliban Government in 2001. As a result of the collapse of the Taliban Government, the bridge was not completed. The bridge was designed to span the Tarin River as a single carriageway of 3.8 meters plus 0.6 meters for a sidewalk and railings with a total length in excess of 160 meters. The Project will adhere to the original design with the exception of the carriageway which will be widened to two lanes. Once completed the Tarin Bridge will be the first and only bridge crossing the Tarin River.

1 Deh Rawod is also labeled as Dihrawud (by Afghanistan Information Management System, AIMS). It is referred to as Deh Rawod for consistency with the Engineering Reports.

Completion of this bridge will increase access to various authorities in the Deh Rawod and Charchino Districts north of the river, and encourage regional commerce between southern Uruzgan and Kandahar Provinces. More than 20 provinces and 150 villages will be linked, greatly improving access, transport and commerce. The link will also encourage the transition from illicit crop production by providing alternative income and making local commercial crops more economical. It will also improve access for government officials and police, thereby improving security in the area.

Details of the proposed actions are provided below. Details of the existing conditions in the potentially affected area are provided item-by-item under the headings of the relevant environmental criteria in **Section 3.0**.

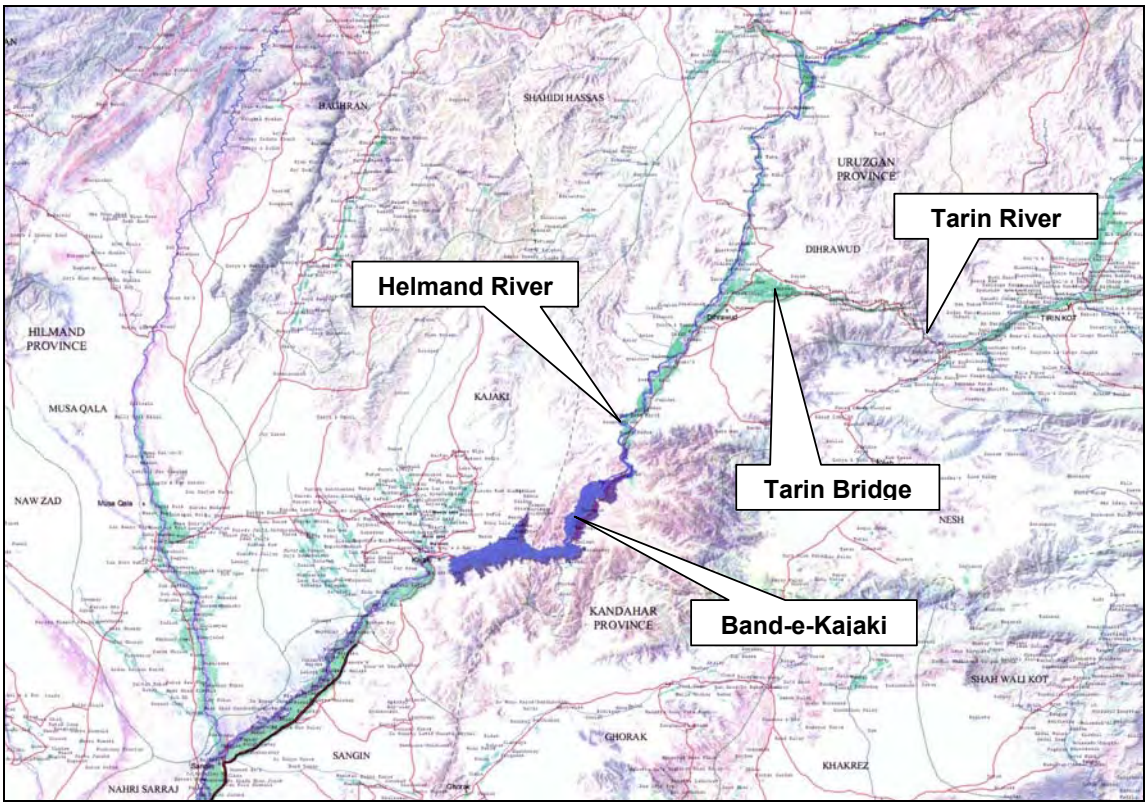

EXHIBIT 2-2. LOCATION OF TARIN BRIDGE IN URUZGAN PROVINCE

2.2 DETAILS OF THE PROPOSED ACTION

The following is a description of the existing status of construction works and the necessary works required to complete the bridge.

2.2.1 Existing Construction Status

The Tarin Bridge was designed as a concrete structure with ten 16-meter spans plus end abutments. The bridge substructures, consisting of the piles, columns and pier caps are completed, and the abutments are partially complete. Two of the ten spans of reinforced girders are currently in place. Materials and equipment, such as reinforcement bars, formworks, bagger mixer, crusher and crane were also found at the site, **Exhibits 2-3** through **2-6** illustrate the existing condition of the bridge works.

2.2.2 Proposed Project Works

The following describes the proposed project works required for completion of the Tarin Bridge:

Road Work
- Grading of the existing road to meet bridge abutments.

Bridge Works
- Widening of piers, abutments and retaining walls, as required;
- Providing superstructure in reinforced concrete or structural steel;
- Providing a duel-lane roadway, a walkway, curbs parapets, railings and drainage spouts; and
- Repairs and maintenance of existing bridge and drainage structures.

The estimated cost for the Project is approximately $430,000. It has been determined that the Tarin Bridge construction will be conducted under the supervision of a USAID General Contractor and a sub-contractor who will construct the bridge.

EXHIBIT 2-3. BRIDGE PEIRS (NORTH SIDE)

EXHIBIT 2-4. BRIDGE PEIRS

EXHIBIT 2-5. EXPOSED REINFORCMENT BARS

EXHIBIT 2-6. LAID ROADWAY SECTIONS

2.3 ENVIRONMENTAL POLICIES AND PROCEDURES.

2.3.1 General

In June 2002, for the first time in the history of Afghanistan, an authority for environmental management was mandated in the newly formed government – The Ministry of Irrigation, Water Resources and Environment. (MIWRE). A Department of Environment has been created but it does not, at present, have any dedicated staff working specifically on environmental issues and comprises exclusively the Minister, the Deputy Minister for environmental affairs and the Director of Planning. The United Nations Environment Program (UNEP) is currently undertaking a capacity building program to develop this department.

2.3.2 Legislative Framework

In the current transition period, it has been determined (Bonn Agreement, 2001) that the 1964 constitution enacted under the monarchy shall continue to govern Afghanistan's legal system. Based on this legal framework, the following laws containing important and valid environmental provisions have been identified:

Environmental Law	Date
Water Law	1981
The Forestry Law	2000
Law for Land Ownership	2000
Nature Protection Law	1986/2000
Hunting and Wildlife Protection Law	2000
Range Management Law	2000
Agriculture Cooperative Development Law	2000
Charter for the Development of Fertilizer and Agro-chemicals	2000

However, none of the current laws accurately reflect the new institutional arrangements, or contain modern provisions for environmental management[2]. MIWRE has begun to draft a new set of environmental legislation.

In the absence of adequate environmental legislation, the Transitional Authority has issued various decrees of sorts banning certain activities, such as hunting. However, it has proven difficult to enforce these measures for reasons such as lack of human resources, funding and, as identified above, lack of capacity.

2.3.3 Local Governance

Its is important to note that throughout its history governance in Afghanistan has been largely based on the provincial, municipal and local levels, and accordingly natural resources are also often managed at these levels rather than centrally in Kabul. For example, water resources were frequently managed by a Mirab (water master) elected by farmers to make key decisions on water distribution, operations and maintenance, as well as to be a link with the government water personnel[3].

2 UNEP, Afghanistan, Post Conflict Environmental Assessment, February 2003, page 97.

3 UNEP, Afghanistan, Post Conflict Environmental Assessment, February 2003, page 95.

Years of conflict have damaged this local decision-making structure resulting in disparate and fragmented systems. However, given that nearly 80 percent of the population is located in rural areas, the Government has identified a strong future for the re-establishment of local level, community based environmental management.

2.3.4 Afghan Environmental Assessment Procedures

No formal EIA process has been, or is in place, in Afghanistan. As a result many projects, such as deep-well drilling or large-scale irrigation projects, are being conducted without considering the environmental consequences of such activities. Additionally, there is no consistent application of EIA amongst donor agencies and international organizations currently working in the country. There are no clear plans to establish EIA policy at the current time.

EXHIBIT 2-7. ARIAL VIEW OF THE TARIN BRIDGE - APRIL, 2003

3.0 ENVIRONMENTAL SCREENING

3.0 ENVIRONMENTAL SCREENING

As noted in **Item 1.2**, USAID has determined that REFS Component 1 activities require environmental screening to identify the appropriate level of documentation for infrastructure activities. This section of the IEE provides the necessary screening for the Tarin Bridge Project.

3.1 SCREENING METHODOLOGY

Introduction. To establish the context for the environmental screening, the following:

- Reviews the definition of environmental criteria as established by the applicable USAID regulations and other considerations;
- Defines the Project Area for the purpose of the screening;
- Explains the screening process used to identify:
  - Potential impacts based on the proposed actions and the sensitivity of the environment in which they will occur;
  - Provisions to avoid or otherwise mitigate actions incorporated in the Project; and
  - Additional recommendations.

A summary table of the screening process is presented by **Exhibit 3-1**. Application of the screening process is documented in **Items 3.2** through **Item 3.6**.

Potential Impact Identification Methodology. Potential impacts have been identified on the basis of experience on similar projects and in similar circumstances; and, insofar as possible, a "scoping process" incorporating consultations with local stakeholders with intimate knowledge of the Project Area. Persons beyond the immediate Project Area having expertise relevant to the environmental aspects of the proposed action have consulted in the process, including representatives of the Afghan and local host governments, public and private institutions, the USAID Mission staff and the staff of other concerned agencies such as the U.N. Environmental Program. A list of organizations and individuals contacted is provided by **Appendix D**.

Environmental Criteria. The environmental criteria applied in the screening process have been determined on the basis of applicable USAID regulations and other considerations as follows:

- **Applicable USAID Regulations**. Paragraph 216.1 (c) (10) of the Agency Environmental Procedures states that the "*term environment, as used in these procedures with respect to effects occurring outside the United States, means the natural and physical environment".* Accordingly, the screening addresses:

  Item 3.2 (Physical Resources). Physical resources are generally defined to include topographic, soil, geological and related attributes. Sub-headings in this section are:

  - Topography (Item 3.2.1)

EXHIBIT 3-1
POTENTIAL IMPACTS AND MITIGATION

ENVIRONMENTAL CRITERIA	POTENTIAL IMPACTS	Avoidance / Mitigation Action
1.0 PHYSICAL RESOURCES		
1.1 Topography & Land Forms	Cut and Fill and Borrow Pits	Designs will balance all cut and fill activities within the construction site insofar as it is possible to do so. No borrow pits will be excavated.
	Quarry Operations	Only licensed quarrying operations are to be used; if licensed quarries are not available the Sub-Contractor will be responsible for setting up its dedicated crusher plants at approved quarry sites.
	Erosion/Scour	Rehabilitation of existing piers and embankments is planned. Accordingly, no significant adverse erosion/scour impacts area anticipated. No mitigation actions required.
1.2 Soils	Erosion/Scour	See 1.1 above
	Contamination Due to Spills	Fuel and chemical storage will be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 percent of the volume of tanks. Filling and refueling shall be strictly controlled and subject to formal procedures. All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use. The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any drain or watercourses. The contract specifications also require the preparation of an Emergency Response Plan to deal with accidents and emergencies, including environmental/public health emergencies associated with hazardous material spills and similar events.
1.3 Seismic & Geological Characteristics	Demand for Quarried Materials	Only licensed quarrying operations are to be used; if licensed quarries are not available the Sub-Contractor will be responsible for setting up its dedicated crusher plants at approved quarry sites.
	Seismic Vulnerability	Earthquake Loading Design is specified for the Project.
1.4 Hydrology	Surface Hydrology	Coordination with local land use planning authorities and local residents is required. Construction camps and other potential sources of secondary impacts must be properly sited and provided with drainage and wastewater facilities. Contract documents stipulate that construction activities shall impact as little as possible on the supply of water to surrounding irrigation systems and associated agricultural lands. Rehabilitation activities should be timed so minimal disruption to agricultural areas is achieved. Interference with the supply to, of abstraction from, of the pollution of, water resources is prohibited. The Sub-Contractor shall not discharge or deposit any matter arising from the execution of the Work into any waters except with the permission of the regulatory authorities concerned. Existing stream courses and drains must be kept safe and free from any debris and any materials.
	Area Wetland	No wetlands of significant biological importance are within the potentially affected area. Waters of the Tarin River flow into the Sistan Basin in the South west of the country. However, the limited nature of construction activities is unlikely to have any significant affect on the wetlands in this area. No mitigation actions, other than those incorporated in the Project, are warranted.
	Subsurface Hydrology	No impacts to subsurface hydrology are anticipated. The Sub-Contractor is required to prevent interference with the supply to, of abstraction from, or pollution of, water resources including underground percolating water.

	Flood Characteristics	No impacts resulting from flood conditions are anticipated. No mitigation actions required.
1.5 Air Quality	Rehabilitation Impacts	- The Sub-Contractor will be required to spray road surfaces, excavation and construction sites. - Trucks carrying earth, sand or stone will be covered with tarps. - Contract provisions allow suspension of work in unfavorable conditions. - Machinery and equipment will be fitted with pollution control devices and checked at regular intervals. - Open burning will be prohibited in populated areas.
1.6 Mines and Unexploded Ordnance	Uncontrolled Detonation	The Project will receive a Certificate from the United Nations Mine Action Center that there are no mines/UXO at or near the site.
2.0 NATURAL/BIOLOGICAL RESOURCES		
2.1 Flora	Destruction of Habitat	The Project is not anticipated to have significant negative impacts to flora within the vicinity of the bridge.
2.3 Fauna	Destruction of Habitat	The Project is not anticipated to have significant negative impacts to fauna within the vicinity of the bridge
2.3 Aquatic Habitat	Destruction of Habitat	The Project is not anticipated to have significant negative impacts on natural habitats within the vicinity of the bridge
2.4 Protected Areas	Rehabilitation Impacts	There are no protected areas within 200 kilometers of the Project site.
3.0 OTHER ENVIRONMENTAL CONCERNS NOTED BY 22 CFR 216		
3.1 Land Use/Controls	Potential PAPS Impacts	No impacts to project-affected persons (PAPs) as that term is generally defined by the international assistance community (i.e., persons whose livelihood is directly or indirectly affected by a project) are anticipated. Adoption of Guidelines attached as **Appendix B** are recommended in the event that such impacts emerge unexpectedly.
	Rehabilitation Impacts	Coordination with local land use planning authorities is required. Construction camps and other potential sources of secondary impacts must be properly sited and provided with drainage and wastewater facilities.
	Operational Impacts	Impacts are expected to be minimal. No mitigation actions warranted.
3.2 Energy	Exploitation of Energy Resources	Impacts are expected to be minimal. No mitigation actions warranted.
	Demand for Petroleum products	Impacts are expected to be minimal. No mitigation actions warranted.
3.3 Natural Resources	Exploitation of Natural Resources	Impacts are expected to be minimal. No mitigation actions warranted.
	Demand for Construction Materials	A considerable amount of construction materials remain at the Project site, accordingly there is less demand for procured construction materials. No mitigation actions warranted.
3.4 Urban Quality	Impacts to Roadside Structures and Activities	Impacts are expected to be minimal. No mitigation actions warranted.
3.5 Historic & Cultural Resources	Demolition or Damage Due to Rehabilitation	No sites of historical or cultural significance have been observed within vicinity of the Project that maybe affected by Project activities. However, Sub-contractors are required to consult with provincial-level representatives of the Archaeological Committee under the Ministry of Information and Culture, obtain any necessary clearances in regard to historic and cultural resources prior, and provide written documentation of these consultations to the Contractor prior to the initiation of work. In the event of unanticipated discoveries of cultural or historic artifacts, the Sub-Contractor is obligated to take all necessary measures to protect the findings and shall notify the Contractor and provincial-level representatives of the Archaeological Committee and the Ministry of Information and Culture. If

		continuation of the work would endanger the finding, project work shall be suspended until a solution for preservation of the artifacts is agreed upon.
4.0 ADDITIONAL ENVIRONMENTAL CONCERNS RAISED BY SIMILAR PROJECTS		
4.1 Socio-Economic Considerations	Impacts Deemed Beneficial	No mitigation actions warranted other than the adoption of Guidelines in the event of potential impacts to PAPs as discussed in Item 3.1 above.
4.2 Public Health	Disease Transmission	Sub-Contractors are required to provide basic emergency heath facilities for workers and encourage programs aimed at the prevention of sexually transmitted diseases as a part of all construction employee orientation programs.
	Access to Heath Facilities	Access to health facilities will be improved by Project activities. No mitigation actions required.
	Contamination Due to Spills	See Item 1.4 above.
	Air and Noise Impacts	See Item 1.5 above.
4.3 Safety	Conflicts with NMT	Impacts are expected to be minimal. No mitigation actions warranted, but actions to encourage greater use of reflectors and greater safety awareness are recommended.
4.4 Other Infrastructure Networks	Water Supply & Waster Water Collection Networks	Impacts are expected to be minimal. No mitigation actions warranted.

- Soils (Item 3.2.2)
- Seismic & Geological Conditions (Item 3.2.3)
- Hydrology (Item 3.2.4)
- Climate and Air Quality (Item 3.2.5)
- Mines and Unexploded Ordnance (Item 3.2.6).

Item 3.3 (Natural/Biological Resources) - the natural/biological aspects of the potentially affected environment. These are discussed under the sub-headings of:

- Fauna (Wildlife) (Item 3.3.1)
- Flora (Plant Species) (Item 3.3.2);
- Aquatic Habitat (Item 3.3.3); and
- Protected Areas (Item 3.3.4).

In addition to these requirements, Paragraph 216.6 of the Procedures states that "… *Environmental Assessment(s) should include discussions of ….. possible conflicts between the proposed action and land use plans policies and controls for the areas concerned; energy requirements and conservation potential of various alternatives and mitigation measures; natural or depletable resource requirements and conservation potential of various requirements and mitigation measures; urban quality; historic and cultural resources; design of the built environment; reuse and conservation potential of various alternatives and mitigation measures; and means to mitigate adverse environmental impacts*". Accordingly, these issues are addressed under the following heading and subheadings:

Item 3.4 (Other Environmental Concerns Noted by 22 CFR 216) describes these aspects of the environment under the following sub-headings:

- Land Use and Development Policies & Controls (3.4.1);
- Energy & Conservation (3.4.2);
- Use of Natural/Depletable Resources (3.4.3);

- Urban Quality/Design of the Built Environment (3.4.4); and
- Historic and Cultural Resources (3.4.5).

- **Other Considerations.** Additional environmental issues are generally associated with rehabilitation projects and are addressed as:

  Item 3.5 (Additional Environmental Concerns Noted for Consideration). These are discussed under the sub-headings of:

  - Socio-Economic Considerations (Item 3.5.1);
  - Safety (Item 3.5.2);
  - Public Health (Item 3.5.3);
  - Gender and Disabled Persons Issues (3.5.4);
  - Noise (Item 3.5.5); and
  - Other Infrastructure Networks (Item 3.5.6).

Definition of the Project Area. The potentially impacted area of a given project (generally referred to as the Project Area) is defined by the nature of the proposed action and the sensitivity and circumstances of the environment in which it will occur.

Potential direct impacts of a project such as the Tarin Bridge will be largely confined to the Project's construction limits and immediately adjacent environs. The conceptual limits of the Project Area must be expanded, however, to include the potential impacts of network improvements and other indirect and cumulative impacts in accordance with the circumstances of the particular environmental characteristic under discussion.

The scope of the examination must be expanded to ensure that environmental impacts of potential down-stream hydraulic impacts, for example, are taken into account. Generally, however, given the limited nature of the action included in the Project limit the potential for direct impact to the immediate environs of the bridge.

Types of Impacts Considered. Environmental consequences resulting from the impacts of rehabilitation projects include:

- Direct Impacts - i.e., those directly due to the Project itself such as the conversion of land previously used for agricultural use or unused land converted to infrastructure. Direct impacts also include the impact of rehabilitation expenditures in the local economy.

- Indirect Impacts - i.e., those resulting from activities prompted by the Project, but not directly attributable to it. The use of rock or crushed brick for project works, for example, has an indirect impact of increasing the demand for these materials.

- Cumulative Impacts - i.e., impacts in conjunction with other activities. A single road improvement, for example, may not exert a significant environmental impact, but if several roads comprising a network are developed in the same area, or are combined with agricultural reform programs in the same general area, the cumulative or additive effect could be large.

Impacts in all three categories may be either:

- Short-term – i.e., impacts which occur during construction and affect land use, air quality and other factors. Many of these impacts, however, will be short-lived and without long-lasting effects. Even the effects of some relatively significant impacts such as borrow pits, for example, may be eventually erased if appropriate mitigation actions are taken. Many potential short-term negative impacts can be avoided or otherwise mitigated

through proper engineering designs and by requiring Sub-Contractors to apply environmentally appropriate construction methods. Or;

- Long-term – Long-term negative impacts can result from the conversion of agricultural land to other land uses or vice versa; air and water pollution; problems associated with scattered borrow pits; and haphazard growth.

Both short-term and long-term impacts may be either beneficial or adverse. Short-term positive impacts will include, for example, the generation of employment opportunities during the construction period. Long-term benefits will include enhanced development opportunities, enhanced agricultural output and economic growth.

Determination of the Scope & Significance of Issues. To determine the scope and significance of issues to be analyzed, including direct and indirect effects of the Project on the environment, the following examines each environmental criterion identified above and presents:

- Existing Conditions. The current statement of existing conditions is drawn primarily from site observations in April and August 2003.

- Potential Impacts and Avoidance/Mitigation Measures. Potential impacts and measures incorporated in the Project to avoid or otherwise mitigate the potential impacts are identified. These include measures incorporated in contracting procedures and the Project design. Cognizance of the Project's design and contracting provisions is deemed to be an important means of "*narrowing the discussion of these issues to a brief presentation of why they will not have a significant impact on the environment"* in accordance with the 22 CFR 216 Procedures.

- Additional Recommendations. The examination also identifies the issues for which mitigation beyond that already incorporated in the Project design and standard contracting procedures are considered warranted, including recommendations beyond the scope of the Tarin Bridge Project, but within the scope of REFS.

3.2 PHYSICAL RESOURCES

3.2.1 Topography

Existing Conditions. The site of the Tarin Bridge Project is located in the valley of the Tarin River approximately five kilometers from its intersection with the Helmand River within the Deh Rawod District, Uruzgan Province. Elevations in the area are generally in the range of 1,000-2,000 meters above mean seal level (msl). No unusual topographic conditions in the area have been identified. **Exhibit 3-2** illustrates the flat fertile land within the Tarin Valley and the range of mountains and tributaries feeding both the Tarin and Helmand Rivers.

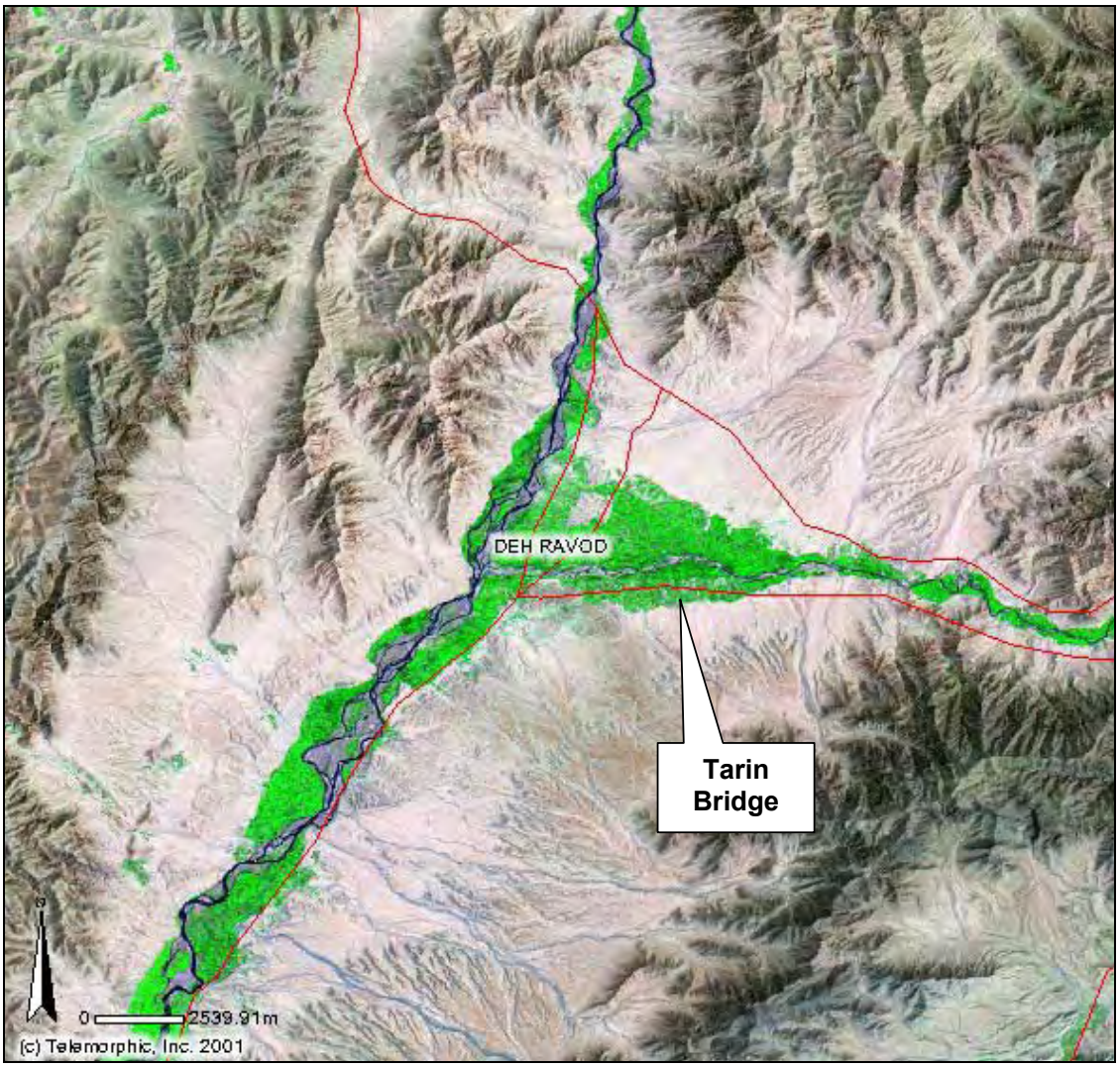

EXHIBIT 3-2. SATELLITE IMAGE INDICATING THE LOCATION OF THE TARIN BRIDGE[1]

Potential Impacts and Planned Avoidance/Mitigation Actions. Potential impacts to topographic conditions of bridge construction projects are generally associated with:

- Cut and Fill. Project works necessitate the requirement for small scale cut and fill activities. Designs will balance all cut and fill activities within the construction site insofar

1 http//:www.telemorphic.com

as it is possible to do so.

- Borrow Pit Excavations. No excavation of borrow pits will be required under the scope of works.

- Quarry Operations. To ensure adequate mitigation of potential adverse impacts, contract documents will specify only licensed quarrying operations are to be used for material sources. If licensed quarries are not available the Sub-Contractors may be made responsible for setting up their dedicated crusher plants at approved quarry sites.

- Erosion and Scour. Provisions for the control of erosion are discussed as a part of the discussions for soils and hydrology below.

Additional Recommendations. None warranted. Provisions incorporated in the design, contracting process and provisions for contract supervision are such that the potential for adverse impacts to topography is obviated.

3.2.2 Soils

Existing Conditions. Little data regarding the soils of this particular area of Afghanistan is available. **Exhibit 3-3** indicates however, that the soils in this region are of a Mesic nature, i.e., sites, habitats and soils characterized by intermediate moisture conditions, i.e., neither decidedly wet nor decidedly dry. The soils in the river valley are fertile and support agricultural activity as indicated by **Exhibits 3-2 & 3-4**.

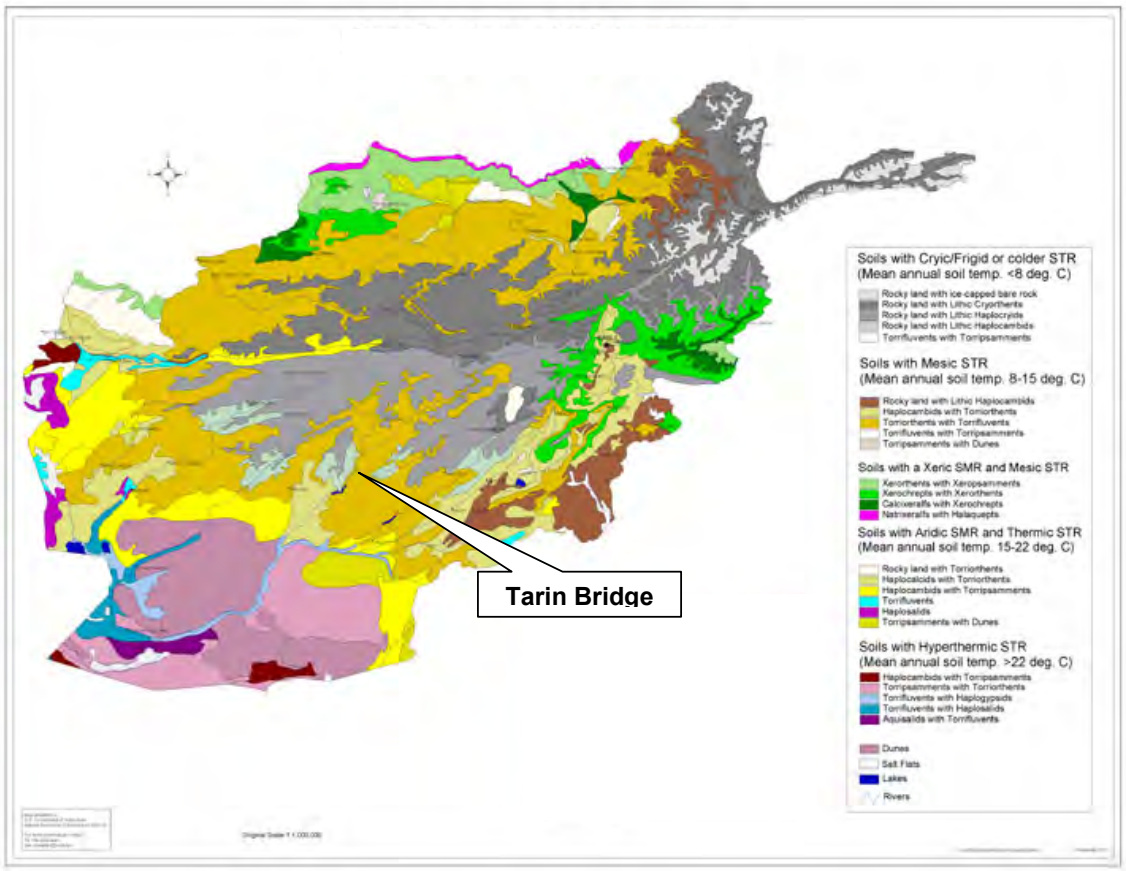

EXHIBIT 3-3. SOIL REGIONS OF AFGHANISTAN

Potential Impacts & Planned Avoidance/Mitigation Actions. Impacts to soils generally associated with construction projects such as the Tarin Bridge include:

- Loss of Soil for Agricultural Production. Although this potential impact is noted as a possibility, no significant loss of agricultural land due to Project works will occur. Any productive soils as might be lost will be mitigated by improved access to markets.

- Borrow Pits. No excavation of borrow pits will be required under the scope of works.

- Erosion & Scour. Construction in and around the river will present a potential for erosion impacts. Potential riverbank erosion impacts will be avoided by contract requirements to line the river banks at the abutments and provide gabions or other scour protection at the piers.

EXHIBIT 3-4. FERTILE AGRICULTURAL LAND

- Conversion of Agricultural Soils Due to Indirect/Induced Impacts. Impacts due to indirect and induced development are likely to be minimal due to the low density rural nature of the Project Area. No mitigation is warranted.

- Contamination Due to Spills or Hazardous Materials. Provisions for the control of hazardous materials and actions to be taken in the event of accidental spills will be incorporated in contract documents. The following conditions are incorporated in contract to avoid adverse impacts due to improper fuel and chemical storage:

  - All fuel and chemical storage (if any) shall be sited on an impervious base within a bund and secured by fencing. The storage area shall be located, as far as is practical, away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 percent of the volume of tanks.

  - Filling and refueling shall be strictly controlled and subject to formal procedures.

  - All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.

  - The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any drain or watercourses.

The contract specifications also require the preparation of an Emergency Response Plan to deal with accidents and emergencies, including environmental/public health emergencies associated with hazardous material spills and similar events.

Additional Recommendations. None warranted.

3.2.3 Seismic & Geological Characteristics

Existing Conditions.[2] Afghanistan's geological circumstances are complex and generally described in terms of plate tectonics, i.e., the premise that the earth's crust is made up of continent-sized slabs of rocks or plates which float on a more fluid layer of material known as the mantle. The plates move, collide, break up and reform as a result of currents and upwellings in the mantle. The mountain chains comprised of the Hindu Kush, Pamir, Karakoram and Himalayan Ranges are believed to have been the result of a collision of the Indian Plate and Asia Plate which began approximately 50 million years ago and continues to the present day. Much of the country is known to be seismically active. There is a history of damaging earthquakes in Afghanistan that are most frequent in the northeast.

The Tarin Bridge Project is located in the generally mountainous central portion of the country in a moderately severe earthquake zone.

Potential Impacts & Planned Avoidance/Mitigation Actions. The Project will present a demand for quarried materials, but is unlikely to have an impact on the area's geological resources. The Project will not add appreciably to the human risk due to seismic events, but the human effects of seismic events could be exacerbated if seismic conditions are not taken into account in the design process. The design standards for the bridge fully address the area's seismic conditions and require earthquake resistant design.

Additional Recommendations. None warranted.

3.2.4 Hydrology

Existing Conditions. The sources of most of Afghanistan's rivers are in the mountains. Water levels in the rivers vary greatly with the highest levels in spring and early summer. In the remaining seasons the rivers may change into small streams or entirely disappear. Three watershed systems can be differentiated in Afghanistan:

- The Eastern Basin (Indus). The Eastern Basin includes the Kabul and Lugor Rivers and their tributaries which drain the eastern part of the country. The rivers within the eastern basin flow generally to the east and eventually join the Indus River and the Arabian Sea. The Eastern Basin is beyond the Project Area.

- The Southern Basin (Sistan-Hilmand). The rivers of the Southern Basin flow generally to the southwest to the Sistan Basin on the Afghanistan-Iran border and include the Helmand (the country's longest river), the Farah and the Khash. The Tarin Bridge Project is a crossing of the Tarin River and is contained within the Southern Basin (see **Exhibit 3-5**). Known characteristics are noted below.

- The Northern Basin (Amu Darya). The rivers in the northern part of the country flow northward to the Amudarya River on the country's northern boundary (and eventually to the Ariel Sea) or disappear in the desert sands. The Project Area does not include the Northern Basin.

The Tarin River (see **Exhibits 3-6 & 3-7**) is a significant tributary of the Helmand River. In the vicinity of the Project Area both the Tarin and the Helmand are perennial waterways with significant seasonal variations in water levels.

The Helmand River rises in the southern Hindu Kush and, flowing south and west, drains

2 Geological resources such as coal and gem stones are discussed as part of **Item 3.3.3**, Use of Natural and Depletable Resources.

about 31 percent of Afghanistan's land area. The river crosses the extensive dry lands in south west Afghanistan, looping below the Dasht-e-Margo desert to enter the Sistan Basin. Wetlands within the Sistan stretch north south for approximately 200 kilometers and have supported irrigated agriculture since at least 3000 BC. Approximately 13 percent of all the countries irrigated land lies within the Helmand Basin where intensive industrial crop production and commercial horticulture is commonly practiced[3].

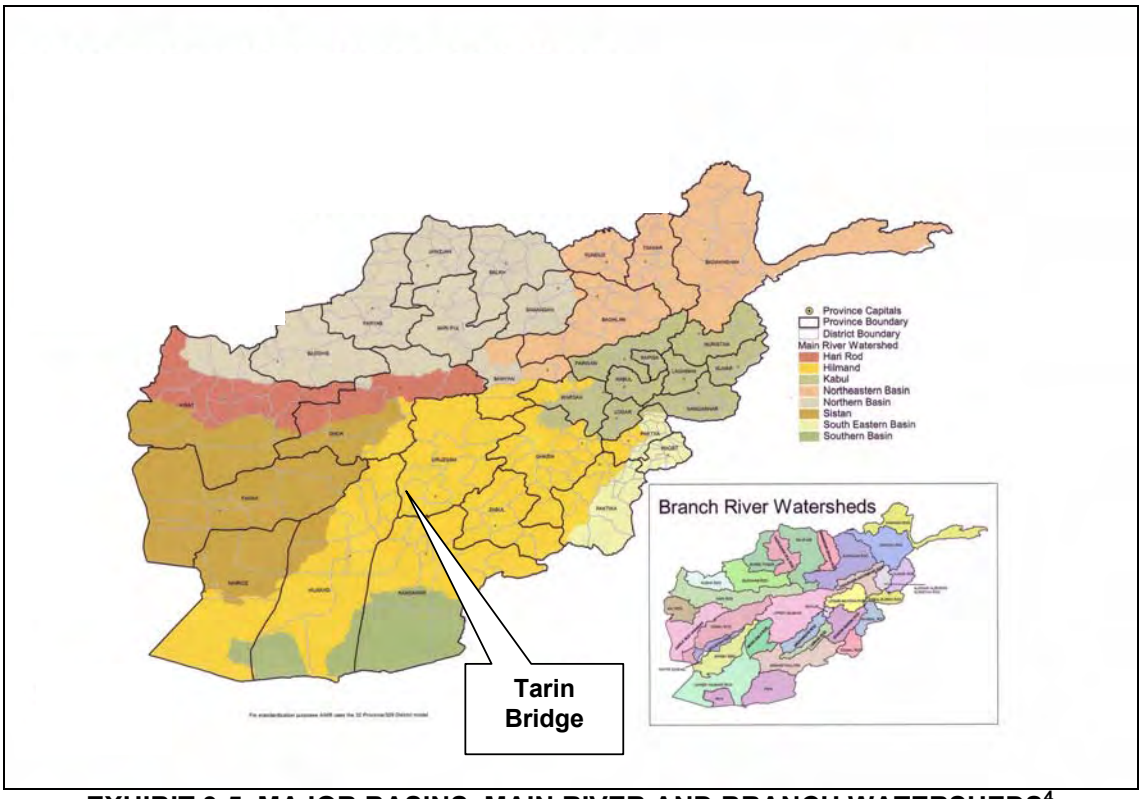

EXHIBIT 3-5. MAJOR BASINS, MAIN RIVER AND BRANCH WATERSHEDS[4]

The Helmand and Tarin Rivers typically rise between March and June rapidly recharging several major lakes bordering Iran to the southwest. The wetland areas of the Sistan vary significantly from year to year depending on the volume of water supplied by the Helmand and its tributaries such as the Tarin River. The Sistan region has remained an important source of agricultural production and is also an internationally important haven for wetland wildlife (the Iranian side is a designated Ramsar site).

Within the past five years, the Helmand River has experienced dramatic declines in water flows. In 2001, the river ran at 98 percent below its annual average, the declining water flows were mainly attributed to declining precipitation and shrinking snowfields. With continued withdrawals for irrigation purposes, Helmand waters failed to each the Sistan Basin altogether in 2001. Anecdotal information supplied by villagers suggested that the Tarin River flow has also steadily decreased over the past five or six years and this has indirectly affected crop production in the fertile river floodplain.

Potential Impacts and Planned Avoidance/Mitigation Actions. Potential impacts due to bridge construction could include impacts to:

3 International Centre for Agricultural Research in the Dry Areas (ICARDA). http://www.icarda.org/Afghanistan/NA/fummary.htm

4 Afghanistan Information Management System (AIMS)

- Surface Hydrology. Potential adverse impacts to surface hydrology in the construction phase of the Project will be avoided through the enforcement of contract provisions and oversight by the USAID/GC. Drainage provisions and other aspects of the Project are not expected to alter the current status of natural water bodies and irrigation structures. In addition to adherence to good engineering and construction practices and the enforcement of contract provisions related to drainage during both the construction and operational stages of the Project Sub-Contractors will be obligated to coordinate with local land use planning authorities. Contract provisions will ensure that construction camps and other potential sources of secondary impacts are properly sited and provided with drainage and wastewater facilities.

The COPA portion of the Conditions of Contract also state that "*The Sub-Contractor shall prevent interference with the supply to, of abstraction from, of the pollution of, water resources …. as a result of the execution of the Works. Areas where water is repeatedly used for dust suppression purposes (if any) shall be laid to fall to especially constructed settlement tanks to permit sedimentation of particulate matter. After settlement, the water may be re-used for dust suppression and rinsing. All water and other liquid waste products arising on the Site shall be collected and disposed of at a location on or off the Site and in a manner that shall not cause either nuisance or pollution. The Sub-Contractor shall not discharge or deposit any matter arising from the execution of the Work into any waters except with the permission of the regulatory authorities concerned. The Sub-Contractor shall at all times ensure that all existing stream courses and drains within and adjacent to the Site are kept safe and free from any debris and any materials arising from the Works. The Sub-Contractor shall protect all watercourses, waterways, ditches, canals, drains, lakes and the like from pollution, silting, flooding or erosion as a result of the execution of the Works*."

EXHIBIT 3-6. TARIN RIVER, TOR NASSER

- Wetlands. Other than those that exist along the riverbank, no wetlands are within the vicinity of the bridge. However, the Tarin River feeds the Helmand River, which as stated above, flows into the Sistan Basin in the south west corner of the country. The wetlands are home to a diverse number of terrestrial and aquatic species. Due to the fairly limited nature of construction works to be undertaken, the potential for impacts upon the wetlands (resulting from construction or operation of the bridge) is considered to be very low. River flow is not expected to alter significantly due to project works. Accordingly, no mitigation actions, other than those incorporated in the Project, are warranted.

- Subsurface Hydrology. No impacts to subsurface hydrology are anticipated. As a contingency, however, the COPA portion of the Conditions of Contract specifically provide that "*The Sub-Contractor shall prevent interference with the supply to, of abstraction from, or the pollution of, water resources ….including underground percolating water…"*

- Flood and Inundation Characteristics. Within the construction phase of the Project potential impacts to flood and inundation will be avoided through the enforcement of contract provisions and oversight by USAID/GC. The bridge and drainage structures will accommodate foreseeable conditions and will stabilize downstream slopes with concrete, or rock gabions, or walls to avoid erosion. Studies will be made during the design to determine the flow characteristics of the river, and the changes in flow due to the bridge construction. Measures to minimize erosion and scour will be included in the design.

EXHIBIT 3-7. TARIN RIVER FLOODPLAIN

- Riverbed Sediments. Disturbance of the riverbed will occur during rehabilitation of piers and foundations. Given the low level of industrialization and rural nature of most of the Project Area, the possibility of hazardous deposits within the sediment is considered remote. Contract documents will, however, contain provisions for analysis of the

sediment if determined warranted by the USAID/GC.

Additional Recommendations. None warranted.

3.2.5 Air Quality and Climate

Existing Conditions. Precipitation and wind patterns are major determinants of air quality. Afghanistan's climate is continental, arid to semi-arid, with considerably variations from place to place according to altitude. The mountains such as the Tarin Bridge Project Area are extremely cold in winter and cool in summer. Winter lasts from October to May. Precipitation in the area is generally in the form of snow in the winter months. No significant micro-climatic conditions (e.g., air inversions) have come to light. **Exhibit 3-8** illustrates seasonal precipitation in Afghanistan.

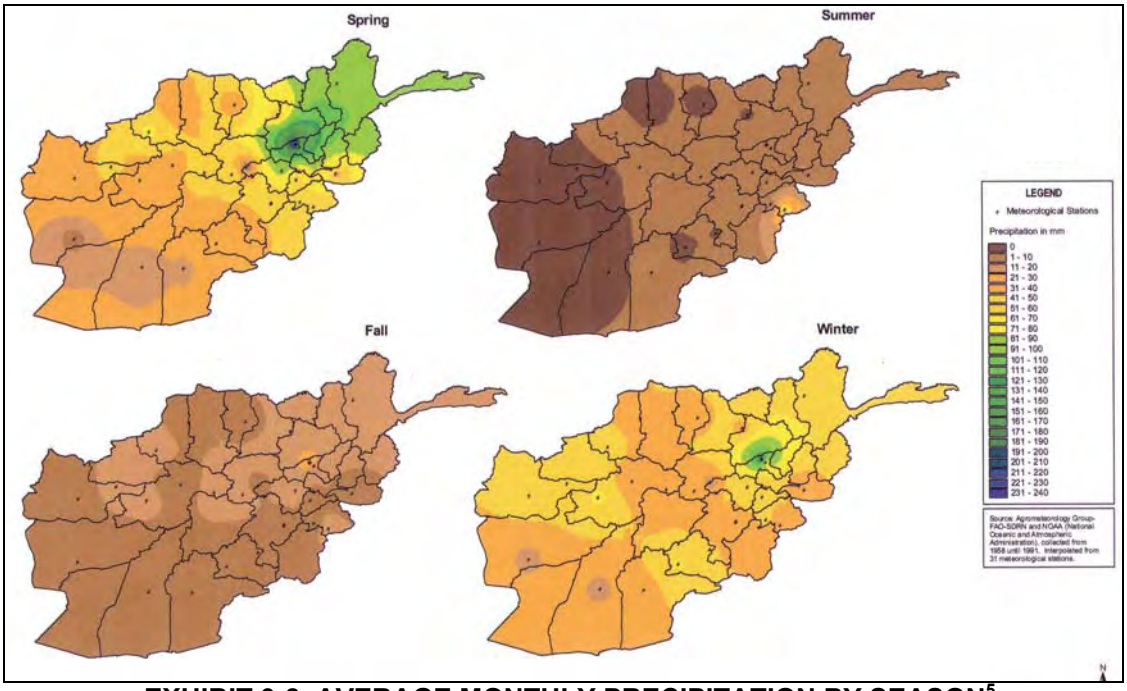

EXHIBIT 3-8. AVERAGE MONTHLY PRECIPITATION BY SEASON[5]

Within the Project Area levels of suspended particulate matter (SPM) are particularly high in areas where roads are not paved. No documentation of air quality is the Project Area is known to be available, but the climatic and soil conditions of the Project Area are such that it is likely to be subject to dust storms, particularly in the summer months, leading to higher levels of SPM. Generally, however air pollution levels outside of the urban areas are considered to be relatively low due to the low level of industrialization. The cities are the areas with the poorest air quality due to automotive emissions and concentrations of industries.

Potential Impacts and Planned Avoidance/Mitigation Actions. **Potential Impacts**. Potential air quality impacts are can be hypothesized in both the construction and operational stages of the Project are as follows:

- Construction Stage. Impacts during construction can be anticipated due to fugitive dust generation in and around construction activities and related activities such as plants for crushing rocks, hot-mix and asphalt plants. The generation of dust due to construction

5 Afghanistan Information Management System (AIMS)

activities will be mitigated through avoidance strategies combined with construction and monitoring. Special conditions will apply to the siting of ancillary activities such as rock crushing. Contract documents will specify that:

- Asphalt and hot-mix plants will be located at least 500 meters away from the nearest sensitive receptor (e.g., schools and hospitals).

- Operators will be required to install emission controls.

- Blasting (if any) will be carried out using small charges, and dust-generating items will be conveyed under cover.

- Sub-Contractors will be required to spray road surfaces, excavation and construction sites to keep them moist for dust control.

- Trucks carrying earth, sand or stone will be covered with tarps to avoid spilling.

- Potential significant adverse impacts to adjacent residents or site employees during construction will be mitigated by either discontinuing until favorable conditions are restored, or, if warranted, sites may be watered to prevent dust generation, particularly at crushing plants.

- Machinery and equipment will be fitted with pollution control devices, which will be checked at regular intervals to ensure that they are in working order. Best practical pollution control technologies will be required.

- Open burning will be prohibited in populated areas and requirements for spraying and related dust control measures and the proper use of solvents and volatile materials will be in incorporated in the contract provisions.

- Pre-construction monitor of existing ambient air quality may be undertaken to provide a baseline for the measurement of air quality impacts during the construction period if considered warranted by the USAID/GC.

- Routine air quality monitoring may also be required in areas of high potential impact (asphalt plants, construction camps, etc) during the life of the Project if considered warranted by the USAID/GC.

- Operational Stage. No operation impacts affecting climate or air quality are anticipated during the operational phase of the Project. No mitigation related to potential air quality impacts during the operational phase of the Project is considered warranted.

Additional Recommendations. Other than verification of provisions noted within the contract documents, none warranted.

3.2.6 Mines and Unexploded Ordnance

Existing Conditions. A certificate has been received from UNMACA that there are no mines or UXO in the Project Area. Special provisions have been made by USAID for the clearance of mines and UXO by the United Nations Mine Action Center (UN MAC).[6]

Potential Impacts and Planned Avoidance/Mitigation Actions. None.

6 REFS Contract, page C-8.

Additional Recommendations. None warranted.

3.3 NATURAL/BIOLOGICAL RESOURCES

3.3.1 Flora

EXHIBIT 3-9. TYPICAL FLORA WITHIN THE PROJECT AREA

Existing Conditions. Located at the confluence of two biogeographic realms – the Palaeoarctic and Indo-Malayan – Afghanistan has the unique distinction of being the original home of a very large number of plant and animal species, a majority of which are endemic. As witnessed by observations recorded by Babur, the founder of the Mughal dynasty who ruled Afghanistan from 1483-1530, the country was renowned for its rich wildlife and with its diversity of different habitats, Afghanistan retains a wide variety of fauna. However, most of the country is subject to some degree of land degradation, notably that resulting from some 20 years of war, deforestation and desertification. Forest area accounts for approximately 14,000 square kilometers (km^2)(or approximately two percent of total land area), considerably less than neighboring countries such as Iran (4.5 percent), Turkmenistan (8.0 percent) and Uzbekistan (4.8 percent).[7]

Flora in the Project area is not particularly diverse, but the area supports a number of agricultural crops the most prominent of which is wheat. Several orchards are located within the vicinity of the Bridge. The area is not home to any unique species of terrestrial flora.

Potential Impacts and Planned Avoidance/Mitigation Actions. Completion of the bridge will have a positive affect on agriculture in the area by opening up access to markets year round. Construction activities will impact only a narrow band of vegetation adjacent to the bridge site. Impacts to plant life during construction will be mitigated through the appropriate construction supervision activities to ensure that ancillary features are properly sited.

Additional Recommendations. None

3.3.2 Fauna

Existing Conditions. Afghanistan is home to 123 species of mammals, 235 species of birds,[8] four species of reptiles, and hundreds of species of insects and fish[9]. Thirty five

7 World Bank, World Development Indicators, 2002
8 World Bank, World Development Indicators, 2002

9 www.icimod.org.np/focus/biodiversity/afgbio.htm

species of animals have been listed as either vulnerable or endangered on the ICUN Red List. The actual number of threatened species may be higher, however, as essentially no wildlife research has been undertaken in Afghanistan for many years.

Consultation with local residents revealed that the most prominent animal species in this area were fox, wolf, and rabbit. The factors that make the Project and the adjacent areas an unlikely venue for threatened and endangered plant species also make it an unlikely site for special status terrestrial wildlife species.

Potential Impacts and Planned Avoidance/Mitigation Actions. Consideration has been given to potential direct impact to wildlife under the following headings:

- Habitat Loss. Improvements will occur largely in disturbed agricultural areas with little loss of habitat. Borrow pits and quarries used for the purposes of the improvements will be restricted to approved areas previously disturbed. No significant terrestrial habitat loss is anticipated due to direct or indirect impacts.

- Habitat Fragmentation. No evidence has come to light indicating that the proposed project will fragment any wildlife habitat.

- Wildlife Migrations. No evidence has come to light indicating that the proposed project interrupts wildlife migration corridors. The bridge will not interrupt any migratory patterns of any aquatic species.

Additional Recommendations. None warranted.

3.3.3 Aquatic Environment

Existing Conditions. The river is currently used for subsistence fishing during periods of high flow (March-May) and during the winter months. During the summer, when flow is almost negligible, fishing is not possible. No unique fish species or aquatic plants have been identified in the waters of the Tarin River.

Potential Impacts and Planned Avoidance/Mitigation Actions. Aquatic species could be disrupted during construction but there should be minimal permanent loss of habitat from the construction due to the fairly limited extent of construction activities. Additionally, construction works will be timed to occur when the water level is at its lowest (summer).

Additional Recommendations. None warranted.

3.3.4 Protected Areas

Three designated and three proposed protected areas have been identified in the country. The six areas, their locations are indicated by **Exhibit 3-10**. Protected Areas make up 0.3 percent of the total land area of Afghanistan.[10] Features of the protected areas are as follows.

- **Ab-I-Estada Waterfowl Sanctuary.** Established in 1977, the Ab-I-Estada Waterfowl Sanctuary (27,000 ha) is located in conjunction with *Istadeh-ye Mogor*, a large lake north of the town of Nawah. The lake is fed by the Ghazni River and its tributaries and is more than 250 kilometers east of the Project Area In a separate watershed.

10 World Bank, World Development Indicators, 2002

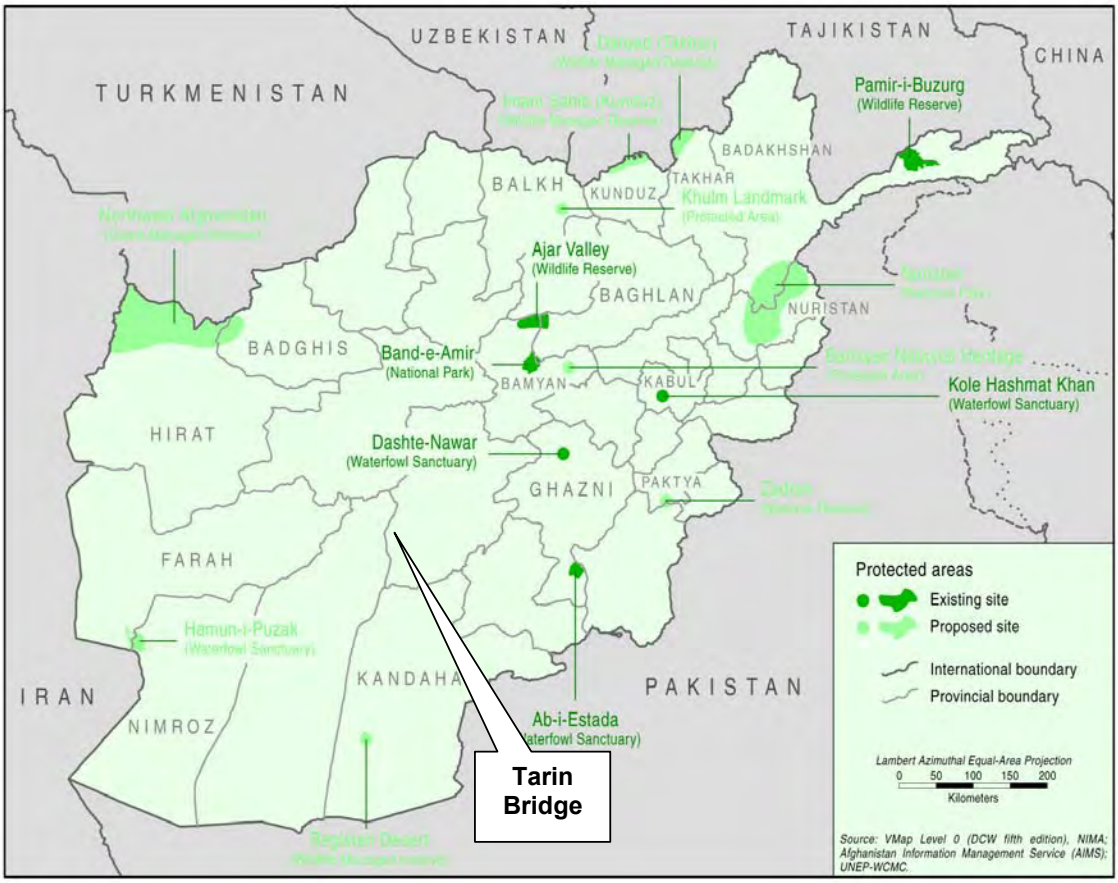

EXHIBIT 3-10. PROTECTED AREAS OF AFGHANISTAN[11]

- **Ajar Valley Wildlife Reserve**. Established in 1978, the Ajar Valley Wildlife Reserve (40,000 ha) is a former royal hunting ground located in Bamian Province in the central part of the country. The Reserve is more than 250 kilometers from the Project Area in a separate watershed.

- **Bande Amir National Park**. Established in 1973, Bande Amir National Park (41,000 ha) is also located in Bamian Province near the Ajar Valley Wildlife Reserve in the central part of the country. The Park is located more than 200 kilometers from the Project Area in a separate watershed.

- **Dashte-Nawar Waterfowl Sanctuary**. Established in 1977, the Dashte-Nawar Waterfowl Sanctuary (7,500 ha) is located in Ghazni Province. The sanctuary is located more than 200 kilometers from the Project Area in a separate watershed.

- **Pamir Buzurg Wildlife Sanctuary**. Established in 1978, the Pamir Buzurg Wildlife Sanctuary (67,938 ha) is located in the extreme northeastern part of the country and well more than 200 kilometers from the Project Area in a separate watershed.

- **Kole Hashmat Khan Waterfowl Sanctuary**. Established in 1973, the Kole Hashmat Khan Waterfowl Sanctuary (191 ha) is a former royal hunting ground located far south of Kabul more than 200 kilometers from the Project Area.

11 UNEP, Afghanistan Post-Conflict Environmental Assessment.

Potential Impacts and Planned Avoidance/Mitigation Actions. No potential impacts identified with Project Activities

Additional Recommendations. None warranted.

3.4 OTHER ENVIRONMENTAL CONCERNS NOTED BY 22 CFR 216

As noted in the introductory remarks, issues addressed in this section are discussed under the following headings:

- Land Use and Development Policies & Controls (3.4.1)
- Energy & Conservation (3.4.2)
- Use of Natural/Depletable Resources (3.4.3)
- Urban Quality/Design of the Built Environment (3.4.4)
- Historic and Cultural Resources (3.4.5)

3.4.1 Land Use and Development Policies & Controls

Existing Conditions. As of 1988, approximately 12 percent of Afghanistan's land was estimated to be arable. Land uses within the vicinity of the Project Area are indicated by the accompanying photographs and can be characterized as follows:

Agricultural Land. The predominant land use within the vicinity of the bridge is agricultural land, as depicted in **Exhibit 3-11. Exhibit 3-1** also illustrates the fertile nature of the surrounding landscape. Agricultural land makes up 58.4% of total land area in the country.[12] The agricultural land in this area is reportedly highly productive and supports a number of crops such as wheat, corn and potatoes. A number of fruit baring orchards are also located within the project area, including cherry and apricot orchards.

Urban. Small urban settlements are common along the river banks of both the Train River and the nearby Helmand River. The bridge is located adjacent to the village of Tor Nasser which reportedly supports approximately 150 families (about 700 people). Other notable settlements within the vicinity of the bridge include Miandow.

Land use and development policies and controls are largely within the purview of the Ministry of the Interior (MOI) as the agency responsible for municipal governance and oversight. No policies or controls have been identified which will impact upon the rehabilitation works.

Potential Impacts and Planned Avoidance/Mitigation Actions. Potential land use impacts vary between the rehabilitation and operational phases of the Project as follows:

- Rehabilitation Phase. Sub-Contractors will be required to coordinate all rehabilitation activities with neighboring land uses. Contracts for the Project activities will also require construction operators to attend to the health and safety of their workers, maintain and cleanup campsites, and respect the rights of local landowners.

- Operational Phase. Once the project works are completed no significant changes of neighboring land uses characteristics, are anticipated.

Additional Recommendations. None.

12 World Bank, World Development Indicators, 2002

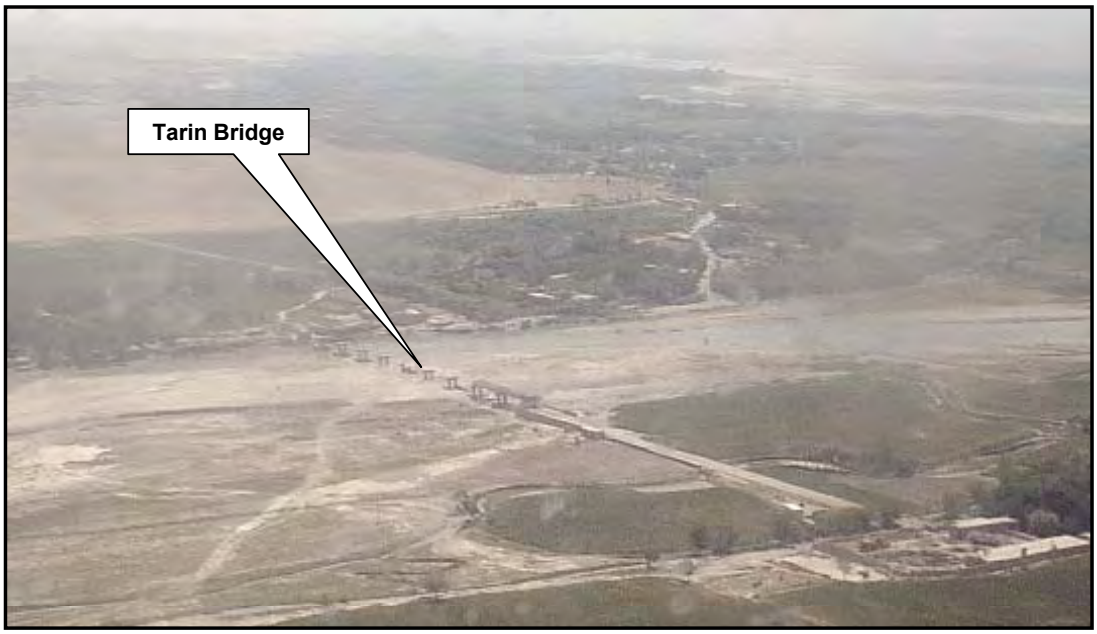

EXHIBIT 3-11. TARIN BRIDGE AND SURROUNDING LANDSCAPE

3.4.2 Energy & Conservation

Existing Conditions. Within the Project Area as with the vast majority of Afghanistan, the population relies on traditional household fuels (wood, bushes, crop residues and animal waste) for its energy needs. There are reports of over-exploitation of forestry resources and non-sustainable production and use of fuel wood leading to deforestation and severe environmental degradation in many areas.[13] No coal mines or gas pipelines have been identified in the Project Area.

Potential Impacts and Planned Avoidance/Mitigation Actions. Given the limited nature of the construction works to the bridge no significant energy demands will be made during the course of the construction phase of the Project.

Additional Recommendations. No additional analysis is considered warranted.

3.4.3 Use of Natural/Depletable Resources

Existing Conditions. Construction of the Tarin Bridge will require the use of certain natural resources. The most economically significant of the available resources in Afghanistan are identified as natural gas, petroleum, coal, copper, chromite, talc, barites, sulfur, lead, zinc, iron ore, salt, precious and semiprecious stones.[14] The country is also well supplied with rock, sand and other quarried construction materials as required for the proposed bridge construction.

As stated in **Section 2.0**, the bridge was under construction by the Taliban until works ceased after the collapse of the Taliban Regime in late 2001. The Taliban left a considerable amount of construction materials and equipment at the site and field observations suggest that much of this material and equipment may still be utilized for the completion of the bridge. This further reduces the demand for any procurement of resources either natural or

13 World Bank, Technical Annex for a Proposed Grant… to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 8, page 2.

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depletable.

Potential Impacts and Planned Avoidance/Mitigation Actions. Resource requirements for the construction works are minimal and will not induce significant impacts to natural/depletable resources. Contract conditions specify controls of quarry usage.

Additional Recommendations. None warranted.

3.4.4 Urban Quality/Design of the Built Environment

Existing Conditions. The Project is in a rural agricultural area. Tor Nasser village is located adjacent to the bridge as indicate in Item 3.4.1.

Potential Impacts and Planned Avoidance/Mitigation Actions. No impacts to urban quality or design of the built environment are anticipated due to project works.

Additional Recommendations. None warranted.

3.4.5 Historic and Cultural Resources

Existing Conditions. Historic and cultural resources include monuments, structures, works of art, the sites of outstanding universal value from historical, aesthetic, scientific ethnological and/or anthropological points of view, including unrecorded graveyards and burial sites. Afghanistan is rich in historic and cultural resources, although many resources have been destroyed during the past 30 years of conflict and by actions by the Taliban Regime who systematically destroyed some of the countries most famous non-Islamic monuments and artifacts such as the Large Budha at Bamiyan.

The responsibility for preservation, maintenance and assessment of the remaining historical and cultural monuments in Afghanistan rests with the Archaeological Committee under the Ministry of Information and Culture (MOIC).

Generally speaking, the most significant aboveground cultural resources are located within the urban areas. None are known to be susceptible to impacts as a result of the Proposed Action.

Potential Impacts & Planned Avoidance/Mitigation Actions. To avoid potential adverse impacts to historic and cultural resources, the Project specifications will state that the Sub-Contractor shall:

- Consult with provincial-level representatives of the Archaeological Committee under the Ministry of Information and Culture, obtain any necessary clearances in regard to historic and cultural resources prior, and provide written documentation of these consultations to the Contractor prior to the initiation of the Work.

- Protect sites of known antiquities, historic and cultural resources by the placement of suitable fencing and barriers;

- Adhere to accepted international practice and all applicable historic and cultural preservation requirements of the Government of Afghanistan, including all appropriate local government entities.

- In the event of unanticipated discoveries of cultural or historic artifacts (movable or immovable) in the course of the work, the Sub-Contractor shall take all necessary

measures to protect the findings and shall notify the Contractor and provincial-level representatives of the Archaeological Committee and the Ministry of Information and Culture. If continuation of the work would endanger the finding, project work shall be suspended until a solution for preservation of the artifacts is agreed upon.

Additional Recommendations. None warranted.

3.5 ADDITIONAL ENVIRONMENTAL CONCERNS

3.5.1 Socio-Economic Considerations

Existing Conditions. Within the Project Area, as with most of Afghanistan, economic considerations in Afghanistan have been overshadowed by political and military upheavals during two decades of war. Gross domestic product fell substantially because of the loss of labor and capital and the disruption of trade and transport; severe drought added to the nation's difficulties in 1998-2001. The majority of the population continues to suffer from insufficient food, clothing, housing, and medical care, problems exacerbated by military operations and political uncertainties. Inflation remains a serious problem. Following the US-led coalition war that led to the defeat of the Taliban in November 2001 and the formulation of the Afghan Interim Authority (AIA) resulting from the December 2001 Bonn Agreement, International efforts to rebuild Afghanistan were addressed at the Tokyo Donors Conference for Afghan Reconstruction in January 2002 resulting in the creation of a trust fund to be administered by the World Bank. Priority areas for reconstruction include the construction of education, health, and sanitation facilities, enhancement of administrative capacity, the development of the agricultural sector, and the rebuilding of road, energy, and telecommunication links.

As of 1990, approximately 80 percent of Afghanistan's ten million person labor force was employed in agriculture, ten percent in the service sector and ten percent in industry. Industries are generally small-scale production of textiles, soap, furniture, shoes, fertilizer, and cement; hand-woven carpets; natural gas, coal, and copper.[15]

The economy of the Project Area is predominantly dependent on agriculture and rangeland grazing. **Exhibit 3-11** illustrates the general economic activity of Afghanistan. As illustrated the Project Area is classified as mixed dry farming and grazing. Completion of the bridge will improve access for an estimated 60,000 residents of Deh Rawod District and neighboring Charchino District north of the Tarin River who need to cross the river to transport goods and access markets.

Once complete the Tarin Bridge will be the only bridge crossing the Tarin River.

Completion of this bridge will increase access to various authorities in the Deh Rawod and Charchino Districts north of the river, and encourage regional commerce between southern Uruzgan and regional economic hub of Kandahar. The country's southwestern provinces and more than 150 villages will be linked, greatly improving access, transport and commerce. The link will also encourage the transition from illicit crop production by providing alternative income and making local commercial crops more economical. It will also improve access for government officials and police, thereby improving security in the area.

There is also significant stigma attached to the bridge in its current form. As mentioned, the bridge was initiated by the Taliban Regime and residents still call the bridge "the Taliban

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Bridge". Some residents point to the bridge as a demonstration of the Taliban's advantages: while they did not finish the bridge, the Taliban did try to help the people. There is a perception expressed by some that the current government has not even tried to provide this level of benefit to the residents. The psychological benefit of providing what the Taliban could not is perceived as a powerful one.

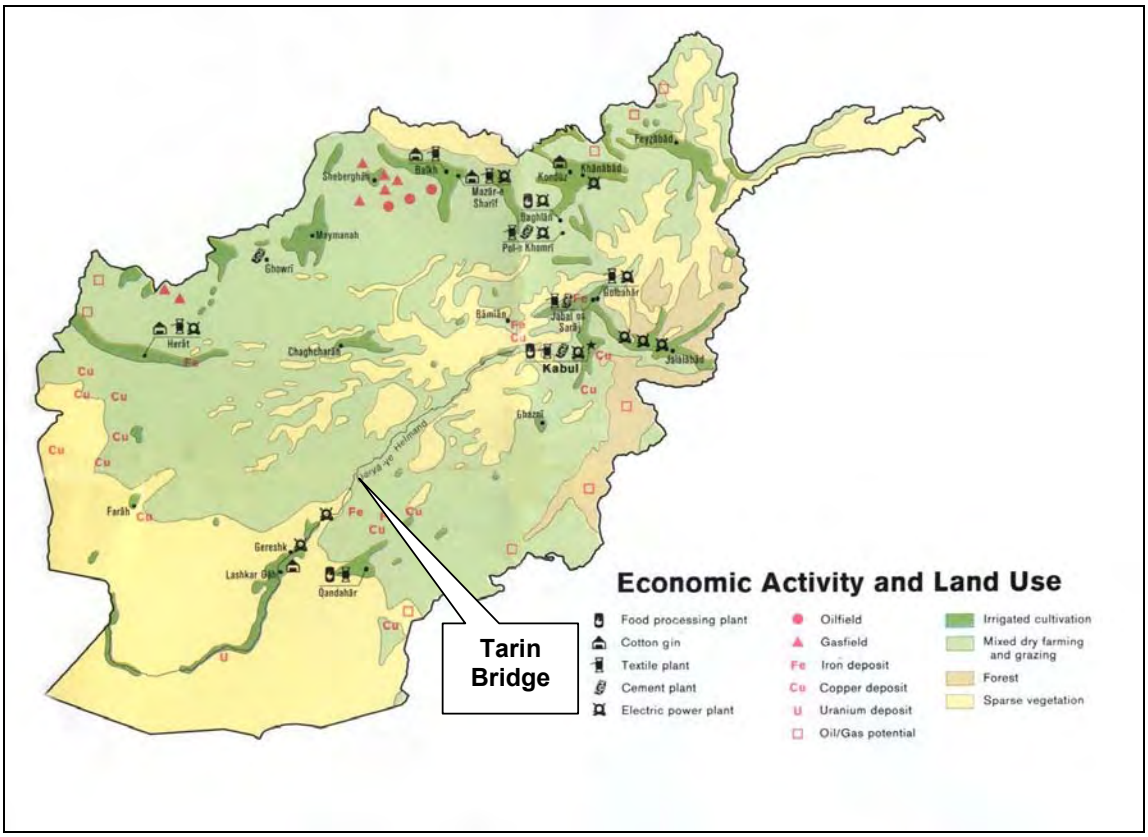


EXHIBIT 3-12. ECONOMIC ACTIVITY AND LAND USE

Potential Impacts and Planned Avoidance/Mitigation Actions. The Project is anticipated to have an overwhelmingly beneficial impact to the economy and social characteristics of the region. Once completed the bridge will increase access to markets by opening up trade routes that were previously unreliable. The completed bridge will also offer improved access and reduce journey times to health facilities. The Project is also expected to improve safety in the region, allowing police and peacekeeping forces greater access to the Deh Rawod and Charchino Districts. Completion of the Bridge may also end the stigmata attached to the 'Taliban' bridge. Given that the potential impacts are positive and the lack of significant adverse impacts, no mitigation actions are required.

Additional Recommendations. None warranted.

3.5.2 Public Health

Existing Conditions. Public health facilities and services in Afghanistan suffered due to civil unrest and severe economic problems. The Tarin Bridge is located in the district of Deh Rawod where the population per health facility is greater than 50,000 (See **Exhibit 3-12**). No data in regard to the locations of health facilities in the Project Area are currently in hand, but anecdotal information suggests that a small clinic / health facility was located in the village of Tor Nasser.

Within the country as a whole, access to adequate and safe water and sanitation facilities is limited. It is estimated that 23 percent of the population has access to safe water. Many provincial and secondary towns have no networked services. Water borne diseases are a major cause of the prevailing high infant and mortality rates (279 per 1000 births compared with a world average of 78 per 1000 births)[16]. Approximately 85,000 children under the age of five die annually from diarrheal diseases. Few residential or public buildings in Afghan cities have sewerage facilities and those that do discharge their wastewater directly into rivers without treatment. The World Bank reports that in 1997, sanitation coverage was estimated to be 23 percent of the urban population (versus eight percent of the rural population).[17]

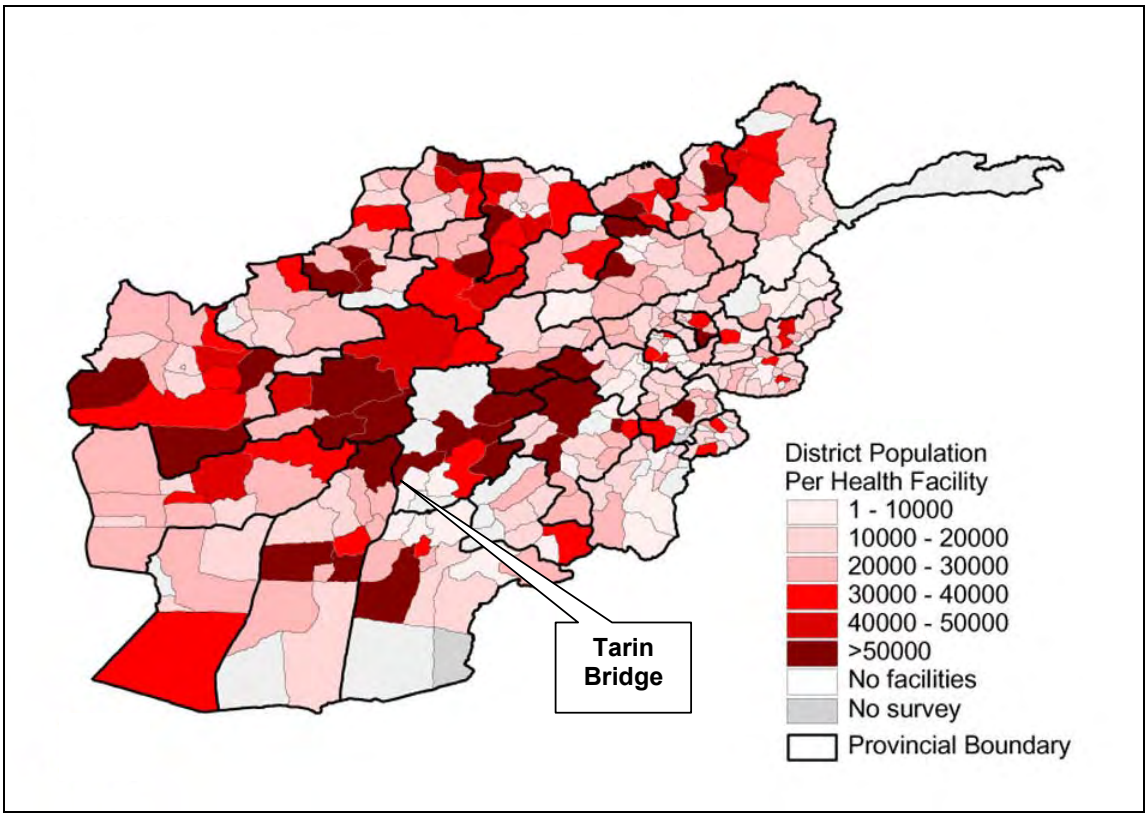


EXHIBIT 3-13. DISTRICT POPULATION PER HEALTH FACILITY18

Potential Impacts and Planned Avoidance/Mitigation Actions. Potential impacts of the Project can be identified as:

- Easier access to health care facilities. Positive health impacts may result due to improved access to health care facilities for those living in proximity to the Project. The anticipated impacts are beneficial and no mitigation is warranted.

- Contamination of local water supplies during construction. Potential impacts to local water supplies include the possibility of temporary labor camps and the water supply and wastewater disposal associated with them during the construction period. Contract provisions to ensure that ancillary facilities are properly sited will be incorporated in all

16 World Bank, World Development Indicators, 2002

17 World Bank, Technical Annex for a Proposed Grant… to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 7, page 2.

18 National Health Resources Assessment, September 2002, USAID.

contract documents.

- Air Pollution. As noted in **Item 3.2.5,** potential air quality impacts during both the construction and operational stages of the Project. Potential air quality impacts during construction include those related to fugitive dust generation in and around construction activities and related activities such as plants for crushing rocks, hot-mix and asphalt plants. Potential air quality impacts during the operational stages of the Project are also addressed in **Item 3.2.5**. Overall emissions of air quality pollutants may be expected to increase due to increased traffic levels facilitated by the Project, however, they are not considered to be significant.

  Specific provisions in contracts to avoid adverse impacts to air quality are incorporated in the Project as previously discussed as part of **Item 3.2.5**. Within the operational stage of the Project the anticipated traffic levels for the foreseeable future are such that mitigation actions are not considered warranted.

- Noise levels with health consequences. Potential noise issues are discussed in **Item 3.5.4** below.

- Disease Transmission. Increases in sexually transmitted diseases (STDs) are often associated with construction projects. Contract documents will require Sub-Contractors to provide basic emergency heath facilities for workers; and encourage programs aimed at the prevention of sexually transmitted diseases as a part of all construction employee orientation programs.

Additional Recommendations. Although mitigation of such impacts is beyond the scope of the proposed Project, the establishment of STD awareness programs is recommended.

3.5.3 Safety

Existing Conditions. Safety issues related to civil unrest and crime are major concerns in the Project Area as they are in the rest of the country. In terms of traffic safety, traffic volumes are light in the Project Area. A lack of basic safety awareness has been noted in the area.

Potential Impacts & Planned Avoidance/Mitigation Actions. No potentially significant project-related impacts associated with traffic safety are anticipated.

Additional Recommendations. Increasing traffic due to economic recovery in the area warrants the consideration of safety awareness activities by the responsible ministries.

3.5.4 Gender & Disabled Persons Issues

Existing Conditions. The terms of reference for REFS specifically note that "*all projects will take into consideration gender issues and accessibility for disabled persons*".[19]

It has been noted that the last twenty years of social upheaval have greatly affected the overall gender situation in Afghanistan, resulting in very restrictive policies vis-à-vis women's participation in public life, access to education, other services and employment opportunities. Women and girls were effectively excluded from any participation in public life during the Taliban regime. With the replacement of the Taliban regime, women have regained the right to education, employment opportunities and services, but the prevailing social norms are still

19 REFS Contract, Section C, Item B, page C-2.

very conservative and restrictive regarding women's participation in the national development effort. There are huge differences between Kabul and the much smaller secondary cities and the rural areas. There are also considerable regional differences with the more restrictive and conservative south and southeastern parts of the country, and the western and northern areas. There are also reported to be great differences between returning refugees and those who remained in the country.[20] No legislation in regard to discrimination against, or incentives for, the employment of the disabled is known to be in place in Afghanistan.

Potential Impacts and Planned Avoidance/Mitigation Actions. Women and disabled persons are not specifically targeted as a part of the Tarin Bridge Project. They will benefit, however, from the improved transport services. These benefits are significant and will improve access to health and educational facilities, reduce travel time and provide other positive impacts. Recruitment of local labor has been identified as an objective of the Project and in other circumstances (e.g., Bangladesh, India, China and elsewhere) similar projects have included specific provisions for gender equity employment opportunities. The types of construction activities are not expected to generate labor opportunities for women in the Afghanistan context, however, due to the prevailing social norms or the disabled due to the nature of the work.

Additional Recommendations. None warranted.

3.5.5 Noise

Existing Conditions. Ambient noise levels in the Project Area are low. Traffic volumes are relatively light. Field investigations did not reveal the presence of "sensitive receptors", i.e., recipients of sound for whom exposures to excessive sound levels are detrimental - hospitals, for example. There are no sensitive receptors in proximity to the Tarin Bridge Site.

Potential Impacts and Planned Avoidance/Mitigation Actions. Mitigation of noise impacts in the construction and operational phases of the Project will include:

- Construction Stage. Contracts will contain provisions to mitigate potential noise and vibration impacts during construction is recommended through the use of:

  - *Source Controls*, i.e., requirements that all exhaust systems will be maintained in good working order; properly designed engine enclosures and intake silencers will be employed; and regular equipment maintenance will be undertaken.

  - *Site Controls,* i.e., requirements that stationary equipment will be placed as far from sensitive land uses as practical; selected to minimize objectionable noise impacts; and provided with shielding mechanisms where possible.

  - *Time and Activity Constraints*, i.e., operations will be scheduled to coincide with periods when people would least likely be affected; work hours and work days will be limited to less noise-sensitive times. Hours-of-work will be approved by the site engineer having due regard for possible noise disturbance to the local residents or other activities. Construction activities will be strictly prohibited between 10 PM and 6 AM in the residential areas. When operating close to sensitive areas such as residential, nursery, or medical facilities, the Sub-Contractor's hours of working shall be limited to 8 AM to 6 PM.

20 World Bank, Technical Annex for a Proposed Grant… to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 79, page 15.

- *Community Awareness*, i.e., public notification of construction operations will incorporate noise considerations; methods to handle complaints will be specified. Sensitive receptors will be avoided as possible (i.e., aggregate crushers, operators, etc.). Disposal sites and haul routes will be coordinated with local officials.

- *Baseline and Routine Noise Monitoring as Part of Construction Supervision*. Pre-construction monitor of existing noise and vibration may be undertaken to provide a baseline for the measurement of impacts during the construction period if determined to be warranted by the USAID/GC. Routine monitoring may also be required in areas of high potential impact (e.g., pile-driving sites and areas of intensive noise-generating activities) if considered warranted by the USAID/GC.

- Operational Stage. Sources of noise during the operational stage of bridge projects generally considered in the environmental assessment include:

  - *Driver Behavior.* Drivers contribute to road noise by the use of horns, the playing loud music, shouting and causing tires to squeal as a result of sudden breaking or acceleration.

  - *Construction and Maintenance.* Bridge construction and maintenance generally require the use of heavy machinery. Although these activities may be intermittent and localized, they nevertheless contribute to the noise levels to the areas in which they occur.

  - *Vibration.* Vibration induced by the resonance of traffic noise can have a detrimental effect on structures and can be a particular concern in the case of cultural heritage sites or lightly constructed buildings not designed to withstand such vibrations. No significant increases in vibration levels are anticipated as a result of the proposed action nor are there expected to be impacts on neighboring structures.

The level of project level traffic is such no mitigation of operational noise is considered warranted.

Additional Recommendations. None warranted.

3.5.5 Other Infrastructure Systems

Existing Conditions. It is anticipated that piped water supply and wastewater collection systems exist only in the urban areas. Irrigation systems and other infrastructure may exist in the rural areas in the form of electrical power lines and pipelines, however, such power supply systems are rare and supply is highly irregular.

The formal infrastructure sector in Afghanistan is largely owned and operated through centralized ministries with some operational and production functions delegated to government enterprises. The reach of formal services, however, is very limited. In the urban water supply and sanitation sectors there is reported to be substantial private participation in service deliveries mainly through communities, NGOs and UN agencies. In rural areas NGOs and communities have been and are likely to remain the core providers of infrastructure services. Details of the known situation are as follows.

- Water Supply Systems. Piped water supply systems exist only in urban areas and are in need of urgent repair. Coverage is poor. Less than 20 percent of Kabul's population has access to piped water and many provincial and secondary towns have no networked services.[1] No piped water supply systems are known to be within the potential direct

impact area.

- Wastewater Collection Systems. Virtually no rural areas and few residential or public buildings in Afghan cities have networked wastewater collection sewerage facilities and those that do discharge their wastewater directly into rivers without treatment. The World Bank reports that in 1997, sanitation coverage was estimated to be 23 percent of the urban population (versus eight percent of the rural population).[2] No piped wastewater collection systems are known to be within the potential direct impact area.

- Electrical Systems. No above ground electrical connections are evident within settlement areas. No underground systems are known to exist within the potential impact area.

Potential Impacts and Planned Avoidance/Mitigation Actions. Given the lack of infrastructure in the Project Area no mitigation actions are required.

Additional Recommendations. None warranted.

3.6 OTHER IMPACT STATEMENTS REQUIRED BY 22 CFR 216

3.6.1 Adverse Impacts That Cannot Be Avoided

Less-than-significant adverse impacts may occur during the road rehabilitation activities such as temporary impacts to air quality, noise levels due to. These impacts will be mitigated by the contract provisions as specified herein, including actions such as water spraying to control dust and the restriction of noise-generating activities to daylight hours and the avoidance of such activities in sensitive areas such as the vicinity of schools, etc.

3.6.2 Short-Term Use Versus Long-Term Productivity

The Proposed Action will enhance long-term productivity of economic activities in the Project Area by facilitating the transport of goods to market and substantially reducing transport costs and time.

3.6.3 Irreversible Commitments of Resources

Certain natural and human resources will be irreversibly devoted to the Project, including the necessary construction materials and labor. Commitment of these resources will be offset by the Project benefits.

[1] World Bank, Technical Annex for a Proposed Grant… to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 7, page 2.

[2] World Bank, Technical Annex for a Proposed Grant… to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 7, page 2.

4.0 ENVIRONMENTAL GUIDELINES

4.0 ENVIRONMENTAL GUIDELINES

For projects such as the Tarin Bridge Project the REFS TOR states that *"the Contractor shall prepare environmental guidelines that will be used to minimize and mitigate potential environmental impacts. Included in the guidelines will be an* ***environmental mitigation checklist*** *to be completed as a part of final design for each project. Where the analysis indicates that negative environmental effects could occur, the project will be designed to avoid or mitigate those effects. The guidelines will also describe procedures for* ***monitoring construction activities*** *to assure that identified mitigation measures have been implemented as planned"* (Emphasis added). Accordingly, the following presents the examination's findings in regard to the environmental mitigation final design checklist (**Item 4.1**) and monitoring (**Item 4.2**). Additional recommendations for environmental actions beyond the scope of the Project, but within the scope of REFS, are presented in **Item 4.3**.

4.1 ENVIRONMENTAL MITIGATION FINAL DESIGN CHECKLIST

The preferred form of mitigation is avoidance of impacts rather than amelioration after the fact and the adoption of enforceable measures and precautions. This preferred form of mitigation has been incorporated in the recommended contract provisions attached hereto as **Appendix 1.**

An environmental and final design checklist is provided by **Exhibit 4-1**.

4.2 MONITORING

Monitoring of projects such as the Tarin Bridge Project generally includes observational monitoring to enforce contract provisions to avoid adverse impacts and may include instrumented monitoring of environmental parameters such as air quality, when warranted.

Monitoring of environmental impacts during the construction process will be the responsibility of the USAID General Contractor (USAID/GC) as a part of contract supervision procedures. A Supervising Engineer (SE) will be assigned to the Project. Compliance procedures will include routine site visits, including the ancillary facilities associated with that package (labor camps, asphalt plants, borrow pit locations, etc.). Major issues to be addressed in the monitoring and compliance reports will include:

- **Air Quality Impacts.** The Supervising Engineer (SE) will be responsible for compliance with contract provisions that specify:
  - Controlled locations of asphalt plants and similar sources of air pollution, use of quarries, etc.
  - Proper use of water sprays and other techniques to lessen dust impacts.
  - Prohibitions against open burning in populated areas.
  - Proper use of solvents and volatile materials.
  - Blasting (if any) to be carried out using small charges.

EXHIBIT 4.1
ENVIRONMENTAL MITIGATION FINAL DESIGN CHECKLIST

For Air Quality, Water, Soil, Noise and Social Impacts

AIR QUALITY

Potential Impact Source	Mitigation Objective	Mitigation Checklist Do designs and bid documents include the following provisions?	Implementation Mechanism & Responsibility
Material Transport	Minimization of dust during transport of fill and construction material	Rock, sand and other dust producing material will be sprayed prior to transport. Trucks must be covered with tarps. Only approved transport routes will be used.	Required by Project Contracts. Enforced by the Supervising Engineer (SE).
Earthwork Activities	Minimization of dust dispersal due to earthworks.	Sub-Contractors are required to spray roadways to minimize dust in dry conditions.	Required by Project Contracts. Enforced by SE.
Concrete Batching and Structural Work	Minimization of airborne particulate and gas emitted during the construction process.	Contracts specify that batch sites shall be located away from human settlements.	Required by Project Contracts. Enforced by SE.
Emissions from Asphalt Plants	Minimization of smoke, soot, airborne particulates and gas emitted due to plant operations.	Asphalt plants may not be located within 500 meters of human settlements. Baseline and periodic air quality monitoring is required.	Required by Project Contracts. Enforced by SE.
Emissions from Construction Equipment & Solvents.	Avoidance of excessive emissions due to poorly maintained equipment.	Contract stipulations require all construction equipment to meet acceptable standards and to be properly maintained. Solvents and volatile materials must be used properly to the satisfaction of the SE.	Required by Project Contracts. Enforced by SE.
On-Site Burning.	Avoidance of smoke and gases which may constitute a nuisance.	On-site burning to be banned in populated areas	Required by Project Contracts. Enforced by SE.

WATER QUALITY

Potential Impact Source	Mitigation Objective	Mitigation Checklist Do designs and bid documents include the following provisions?	Implementation Mechanism & Responsibility
Uncontrolled Runoff During Construction Activities	Avoidance of inadequately planned runoff due to development of staging areas, labor camps, etc.	Runoff from during construction will be strictly controlled as a part of construction supervision activities. Monitoring will be undertaken as a routine part of construction supervision.	Required by Project Contracts. Enforced by SE.
Disruption of Irrigation	Avoidance of interruptions to irrigation flows due to construction activities.	Irrigation systems have been taken into account in design. Alternative water sources will be developed as warranted due to temporary interruptions.	Required by Project Contracts. Enforced by SE.

Effects of Construction Camps & Staging Areas	Avoidance of inappropriate wastewater disposal and runoff.	Provisions for the location and design standards for land use, drainage, health facilities, etc., are established by construction documents.	Required by Project Contracts. Enforced by SE.

SOILS

Potential Impact Source	Mitigation Objective	Mitigation Checklist Do designs and bid documents include the following provisions?	Implementation Mechanism & Responsibility
Loss of Agricultural Land	Minimize use of farmland for road improvement purposes.	Loss of agricultural land has been avoided as much as possible. Use of corridors already dedicated to agricultural use minimizes the need for additional agricultural land. All fill material will be obtained from non-agricultural areas.	Avoidance of agricultural land has been incorporated in the decision-making process.
Borrow Pits in Inappropriate Locations	Avoid loss of agricultural land or other resources	Only government sanctioned quarries and construction material sources will be used.	Required by Project Contracts. Enforced by SE.
Inadequate Slope Stabilization	Minimize soil loss during slope creation and due to erosion and slope failure in the longer-term.	Side slopes standards have been established to reduce erosion potential and/or, if necessary, stabilized, covered with rip-rap or other material to prevent soil erosion. Where appropriate embankment slopes and road cuts will be stabilized by re-vegetation with grazing resistant plant species, placement of fiber mats, rip-rap, rock gabions, or other appropriate technologies.	Incorporated in design. Enforced by SE. Operational maintenance by MPW.
Soil Loss Due to Water-Related Erosion.		Discharge zones from drainage structures will be furnished with rip-rap when warranted, particular in instances in which drainage structures are installed and/or road formation levels are raised and create bare slopes that require stabilization. Down drains/chutes will be lined with rip-rap/masonry or concrete to prevent erosion.	Incorporated in design. Enforced by SE. Operational maintenance by MPW.
Uncontrolled Runoff from Construction & Labor Camps	Avoid soil due to poorly designed and/or maintained constructor and labor camps.	Runoff will be controlled by proper siting of construction camps and staging areas.	Required by Project Contracts. Enforced by SE.

NOISE

Potential Impact Source	Mitigation Objective	Mitigation Checklist Do designs and bid documents include the following provisions?	Implementation Mechanism & Responsibility
Blasting (if any)	Minimize high noise levels and high stress levels due to unanticipated blasting. Control time.	Blasting and drilling times will be limited. Public notification of blasting will be required.	Required by Project Contracts. Enforced by SE.

Pile Driving	Minimize high noise levels, vibrations and time of occurrence.	To be mitigated through use of : - Time limits for pile-driving activities. - Bored piles in sensitive areas. - Shrouds where warranted.	Required by Project Contracts. Enforced by SE.
Earth Moving	Minimize high noise levels and times of occurrence	Limit earth-moving times. Limit number of working vehicles. Use of low-noise emission vehicles. Proper maintenance of equipment. Use of noise barriers where warranted.	Required by Project Contracts. Enforced by SE.
Paving And Other Construction Activities.	Minimize high noise levels and times of occurrence.	Limit construction hours in sensitive areas. Use of properly maintained equipment. Use of noise barriers where warranted.	Required by Project Contracts. Enforced by SE.

SOCIAL

Potential Impact Source	**Mitigation Objective**	**Mitigation Checklist** Do designs and bid documents include the following provisions?	**Implementation Mechanism & Responsibility**
Disruption of Economic Activities	Minimize loss of income due to disruptions.	Contractors are required to minimize disruption due to traffic detours and construction activities. Unavoidable disruptions will be compensate per the recommended Guidelines.	GOA and SE.
Dislocation of Homes and Businesses	Minimize loss of social connections and income.	Relocations, resettlement and income restoration will be mitigated per the Guidelines.	GOA.
In-migration of Labor	Avoidance of social tensions due to competition for resources.	Mitigated by control of labor camps (if any) employee orientation and public information programs.	Construction requirements enforced by SE.

- Controls of hazardous materials.

- Transport of dust-generating items using tarps and other devices to minimize impacts.

- Spraying of road surfaces, excavation and construction sites to keep them moist for dust control as determined advisable by the SE.

- **Water Quality Impacts.** Potential water quality impacts during the construction phase will also be mitigated through the controlled location of asphalt plants and similar sources of runoff, erosion controls, proper siting and provision of facilities at construction camps as tabulated by **Exhibit 4.1** with compliance assured through the oversight of the SE.

- **Soils Impacts.** Potential soil impacts will be mitigated through the control of waste disposal practices and runoff as tabulated by **Exhibit 4.1** as a routine part of construction supervision and enforced through the monitoring of the SE.

  - Embankment & Erosion Prevention Requirements

  - Mining/Quarry Activities – i.e., the requirement that only licensed quarrying operations are to be used for material sources, if available, and the contingency provisions in the contracts if they are not. Selections of quarries used for construction will require the approval of the SE.

- **Social Impacts.** Potential issues related to transport of construction materials, labor camps and other social impacts will be mitigated as a routine part of construction

supervision. Compliance with the contract stipulation in regard to the use of local labor to the maximum extent feasibility will also be monitored by the SE.

- **Public Health**. Compliance with contract provisions to control potential contamination of local water supplies during construction; to control air pollution and noise levels; to provide basic emergency heath facilities for workers; and encourage programs aimed at the prevention of sexually transmitted diseases as a part of all construction employee orientation programs; and other factors having a potential impact will be assured through the oversight of the SE. Although it is beyond the scope of the proposed Project, the establishment of STD awareness programs is recommended

- **Impacts to Other Infrastructure Networks**. Responsibility to ensure compliance with contract provisions to coordinate with all relevant agencies and organizations to avoid disruption of other infrastructure services (water supply, irrigation systems, electricity, etc.) rests with the SE.

- **Noise and Vibration Impacts.** Contract provisions for the control of noise and vibration impacts during the construction phase through the use of site controls, site controls, time and activity constraints and public awareness efforts as tabulated by **Table 4.1** with compliance monitored by the SE.

4.3 RECOMMENDED ACTIONS BEYOND THE SCOPE OF THE PROJECT

Recommendations for actions beyond the scope of the Project, but generally within the scope of the REFS Program, are as follows:

- **Assist the Establishment of a Traffic Safety Program**. In addition to the safety requirements to be observed during the construction period, safety during the operational phase of the Project is a potential concern. Routine monitoring of accident data to ensure that the points of major conflicts are identified as they emerge is recommended. It is also recommended that the Ministry of Public Works (MPW) be encouraged to take the lead in the establishment of a safety enhancement program to include:

  - Use of Lights and Reflectors. Increased use of lights and reflectors should be strongly encouraged for both motorized and non-motorized traffic, particularly bicycles and other slow-moving vehicles. Such a program might include the free or subsidized distribution of reflectors. Such a program could be supported by corporate sponsors or non-governmental organizations (NGOs).

  - Public Awareness Programs. The increased traffic and traffic speed generated by the completed bridge will be a major change in the environment for many residents. Programs to heighten awareness are recommended for incorporation in the Project before construction.

Initiatives in this area are recommended for consideration as part of REFS Component 2.

- **Assist Coordination of Future Land Use & Transport Plans.** The long-term impacts of construction projects could be more significant than the short-term impacts of the construction period and are largely beyond the scope of the Project. REFS Component 2 can assist in the inter-governmental action necessary to monitor these impacts and ensure that they are adequately managed in concert with other concerned agencies.

- **Integrate REFS Institutional Strengthening Initiatives.** Institutional strengthening actions will be necessary as a part of the Project to ensure that the bridge is adequately maintained in the future, to ensure that future biding and tendering procedures are in place and to ensure that environmental issues incorporated in these activities. REFS Component 2 offers an opportunity to provide the necessary institutional initiatives.

- **Coordinate with Other Financing Organizations**. Construction and rehabilitation of Afghanistan's bridges may be supported by organizations other than USAID, including other bilateral organization and the multi-lateral development banks. The establishment of reasonably consistent technical/engineering standards for construction activities is highly recommended. A reasonable consistency in procedural standards and requirements is also highly recommended. Other very closely aligned projects such as the World Bank's Emergency Infrastructure Reconstruction Project (EIRP) will require Afghanistan's ministries to establish reporting procedures and will provide the ministries with institutional strengthening mainly to ensure conformance with procedures established by the Bank. Coordination of the technical reporting and procedures expected by the ministries by USAID, the World Bank, the Asian Development Bank and others is highly recommended so that the burden on local organizations to supply essentially the same information in different formats is minimized.

5.0 RECOMMENDED THRESHOLD DECISION

5.0 RECOMMENDED THRESHOLD DECISION

Project works are not anticipated to induce any significant impacts on the environmental or social characteristics of the Project Area. However, minor impacts will result from some construction activities as noted in **Section 3.0**. Notwithstanding the above, all of the identified impacts can be appropriately managed or mitigated by the measures outlined in **Sections 3 & 4** and provided as Recommended Contract Provisions as **Appendix A**.

Accordingly, a Threshold Decision documenting a **Negative Determination With Conditions** (i.e., adoption of the mitigation and contingency provisions as stipulated herein) is recommended. These conditions are identified as:

- Adoption of the Contract Provisions as provided by **Appendix A**;
- Adoption of the Guidelines for the compensation of project-affected persons (PAPs) as provided by **Appendix B** for use in the event that unexpected impacts are encountered;
- Assist the Establishment of a Traffic Safety Program;
- Assist Coordination of Future Land Use & Transport Plans;
- Integrate REFS Institutional Strengthening Initiatives; and
- Coordinate Activities with Other Financing Organizations.

APPENDIX A

APPENDIX A
CONDITIONS OF PARTICULAR APPLICATION
ENVIRONMENTAL PROVISIONS

The following is recommended for incorporation in the Conditions of Particular Application (COPA) prepared for use in the Tarin Bridge Project.

4.0 ENVIRONMENTAL

4.1 General Provisions and Precautions

The Sub-Contractor shall take all necessary measures and precautions and otherwise ensure that the execution of the Works and all associated operations on the Work Sites or off-site are carried out in conformity with statutory and regulatory environmental requirements of Afghanistan including those established by local governments. The Sub-Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising from the execution of the Work. This shall, wherever possible, be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated. In the event of any spoil or debris or silt from the Work Sites being deposited on any adjacent land, the Sub-Contractor shall immediately remove all such spoil debris or silt and restore the affected area to its original state to the satisfaction of the responsible authorities.

4.2 Water Quality

The following conditions shall apply to avoid adverse impacts to water quality:

- The Sub-Contractor shall prevent any interference with the supply to, or abstraction from, water resources and the pollution of water resources (including underground percolating water) as a result of the execution of the Works.

- Areas where water is regularly or repetitively used for dust suppression purposes (if any) shall be laid to fall to specially-constructed settlement tanks to permit sedimentation of particulate matter. After settlement, the water may be re-used for dust suppression and rinsing. All water and other liquid waste products arising on the Site shall be collected and disposed of at a location on or off the Site and in a manner that shall not cause either nuisance or pollution.

- The Sub-Contractor shall not discharge or deposit any matter arising from the execution of the Work into any waters except with the permission of the Contractor and regulatory authorities concerned.

- The Sub-Contractor shall at all times ensure that all existing stream courses and drains within and adjacent to the Site are kept safe and free from any debris and any materials arising from the Works.

- The Sub-Contractor shall protect all watercourses, waterways, ditches, canals, drains, lakes and the like from pollution, silting, flooding or erosion as a result of the execution of the Works.

4.3 Air Quality

The following conditions shall apply to avoid adverse impacts to air quality:

- Open burning will be prohibited.
- Solvents and volatile materials will be used and stored in manners satisfactory to the Contractor.
- Blasting (if any) will be carried out using small charges, and dust-generating items will be conveyed under cover.
- In periods of high wind, dust-generating operations shall not be permitted within 200 meters of residential areas having regard to the prevailing direction of the wind.
- Asphalt and hot-mix plants sites shall not be established prior to the approval of the Contractor and shall be located at least 500 meters away from the nearest sensitive receptor (e.g., schools and hospitals). Operators will be required to install emission controls.
- Water sprays shall be used during the delivery and handling of materials when dust is likely to be created and to dampen stored materials during dry and windy weather.
- Stockpiles of materials shall be sited in sheltered areas or within hoarding, away from sensitive areas. Stockpiles of friable material shall be covered with clean tarpaulins, with application of sprayed water during dry and windy weather. Stockpiles of material or debris shall be dampened prior to their movement whenever warranted.
- Vehicle with an open load-carrying area used for transporting potentially dust- producing material shall have properly fitting side and tailboards. Materials having the potential to produce dust shall not be loaded to a level higher than the side and tail boards, and shall be covered with a clean tarpaulin in good condition. The tarpaulin shall be properly secured and extend over the edges of the side and tailboards.
- In periods of adverse weather adverse impacts to adjacent residents or site employees during construction will be mitigated by either discontinuing until favorable conditions are restored, or, if warranted, sites may be watered to prevent dust generation, particularly at crushing plants.
- Machinery and equipment will be fitted with pollution control devices, which will be checked at regular intervals to ensure that they are in working order. Best available pollution control technologies will be required.
- Pre-construction monitor of existing ambient air quality may be undertaken to provide a baseline for the measurement of air quality impacts during the construction period if considered warranted by the Contractor.
- Periodic air quality monitoring may also be required in areas of high potential impact (asphalt plants, construction camps, etc) during the life of the Project if considered warranted by the Contractor.

4.4 Protection of Soils

Cut and Fill Activities. In undertaking cut and fill activities associated with the Works the Sub-Contractor shall:

- Select less erodable material, placement of gabions and riprap and good compaction, particularly around bridges and culverts.
- Complete final forming and re-vegetation will be completed as soon as possible following fill placement to facilitate regeneration of a stabilizing ground cover.
- Trench where necessary to ensure successful establishment of vegetation.
- Seed with a fast growing crop and potential native seed mix immediately after fill placement to prevent scour and to encourage stabilization.
- Stabilize embankment slopes and road cuts by re-vegetation with grazing resistant plant species, placement of fiber mats, riprap, rock gabions, or other appropriate technologies.
- Complete discharge zones from drainage structures with riprap to reduce erosion when required.
- Line down drains/chutes with rip-rap/masonry or concrete to prevent erosion.
- Adjust side slopes adjusted in the range from based on soil and other conditions and within a range as determined in consultation with the Contractor to reduce erosion potential or, if necessary, cover with riprap or other material to prevent soil erosion.
- Use stepped embankments for embankments greater than six meters.

Borrow Pits. The following conditions shall apply to borrow pits:

- Borrow areas will be located outside the ROWs.
- Pit restoration will follow the completion of works in full compliance all applicable standards and specifications.
- The excavation and restoration of the borrow areas and their surroundings, in an environmentally sound manner to the satisfaction of the Contractor is required before final acceptance and payment under the terms of contracts.
- Borrow pit areas will be graded to ensure drainage and visual uniformity, or to create permanent tanks/dams.
- Topsoil from borrow pit areas will be saved and reused in re-vegetating the pits to the satisfaction of the Contractor.
- Additional borrow pits will not be opened without the restoration of those areas no longer in use.

Quarries. To ensure adequate mitigation of potential adverse impacts, only licensed quarrying operations are to be used for material sources. If licensed quarries are not available the Sub-Contractors may be made responsible for setting up their dedicated crusher plants at approved quarry sites

Erosion. To avoid potential adverse impacts due to erosion, the Sub-Contractor shall:

- line spillage ways with riprap to prevent undercutting.
- Provide Mitigation plantings and fencing where necessary to stabilize the soil and reduce erosion.
- Upgrade and adequately size, line and contour storm drainage to minimize erosion potential.
- As noted in elsewhere in these Specifications, ditches shall be designed for the toe of slopes in cut sections with gutters or drainage chutes being employed to carry water down slopes to prevent erosion. Interceptor ditches shall be designed and constructed near the top of the back of slopes or on benches in the cut slopes as well as when there is a slope on adjacent ground toward the fill. When the roadway has a steep longitudinal slope, a drain is to be designed and constructed at the down-slope end of the cut to intercept longitudinal flow and carry it safely away from the fill slopes.

4.5 Avoidance of Social Impacts

To avoid adverse social impacts, the Sub-Contractor shall:

- Not proceed without verification by the Government of Afghanistan that lands required for the improvements are free of any squatters, encroachers or other claims or entitlements as specified by the Guidelines and recommendations of the Environmental Assessment of the Kandahar-Herat Road Rehabilitation Project as approved by USAID.
- Coordinate all construction activities with neighboring land uses and respect the rights of local landowners. If located outside the ROW, written agreements with local landowners for temporary use of the property will be required and sites must be restored to a level acceptable to the owner within a predetermined time period.
- Maintain and cleanup campsites.
- Attend to the health and safety of their workers by providing basic emergency heath facilities for workers and incorporate programs aimed at the prevention of sexually transmitted diseases as a part of all construction employee orientation programs.
- Obtain approval of all diversions and accommodations of traffic. A stipulated by Section ___ which states that “the Sub-Contractor shall provide the Contractor with a written traffic control plan which is to include when and where flagmen shall be employed and when and where traffic cones or other devices such as barricades and/or lights will be used. Where … traffic diversions area planned for …additional areas (will) be de-mined and the diversions clearly defined for travel.”
- Construct and maintain by-passes around bridges to be reconstructed until such time as the bridge is open for traffic. By-passes will be removed and the affected areas re-graded so as to blend in with the existing contours when the bridge is opened.

4.6 Noise

To avoid adverse impacts due to noise, the Sub-Contractor shall:

- Consider noise as an environmental constraint in his planning and execution of the Works.

- Use equipment conforming to international standards and directives on noise and vibration emissions.

- Take all necessary measures to ensure that the operation of all mechanical equipment and construction processes on and off the Site shall not cause any unnecessary or excessive noise, taking into account applicable environmental requirements.

- Maintain exhaust systems in good working order; properly design engine enclosures, use intake silencers where appropriate and regularly regular maintain noise-generating equipment.

- Use all necessary measures and shall maintain all plant and silencing equipment in good condition so as to minimize the noise emission during construction works.

- Schedule operations to coincide with periods when people would least likely be affected and limit work hours and work days to less noise-sensitive times. Hours-of-work will be approved by the Contractor having due regard for possible noise disturbance to the local residents or other activities. Construction activities will be strictly prohibited between 10 PM and 6 AM in the residential areas. When operating close to sensitive areas such as residential, nursery, or medical facilities, the Sub-Contractor's hours of working shall be limited to 8 AM to 6 PM.

- Incorporate noise considerations in public notification of construction operations and specify methods to handle complaints. Disposal sites and haul routes will be coordinated with local officials to avoid adverse traffic noise.

- Undertake pre-construction monitor of existing noise and vibration if determined warranted and requested by the Contractor to provide a baseline for the measurement of impacts during the construction period. Routine monitoring may also be required in areas of high potential impact (e.g., pile-driving sites and areas of intensive noise-generating activities) if considered warranted by the Contractor.

4.7 Fuel and Chemical Storage

The following conditions to avoid adverse impacts due to improper fuel and chemical storage:

- All fuel and chemical storage (if any) shall be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 percent of the volume of tanks.

- Filling and refueling shall be strictly controlled and subject to formal procedures.

- All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.

- The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any drain or watercourses.

4.8 Protection of Historic and Cultural Resources

To avoid potential adverse impacts to historic and cultural resources, the Sub-Contractor shall:

- Protect sites of known antiquities, historic and cultural resources by the placement of suitable fencing and barriers;

- Adhere to accepted international practice and all applicable historic and cultural preservation requirements of the Government of Afghanistan, including all appropriate local government entities.

- In the event of unanticipated discoveries of cultural or historic artifacts (movable or immovable) in the course of the work, the Sub-Contractor shall take all necessary measures to protect the findings and shall notify the Contractor and provincial-level representatives of the Archaeological Committee under the Ministry of Information and Culture. If continuation of the work would endanger the finding, project work shall be suspended until a solution for preservation of the artifacts is agreed upon.

4.9 Protection of Utilities

To avoid potential adverse impacts to utilities, the Sub-Contractor shall:

- Ascertain and take into account in his method of working the presence of utility services on and in the vicinity of the Site.

- Take into account in his program the periods required to locate, access, protect, support and divert such services, including any periods of notice required to effect such work in consultation with authorities operating such services.

- Assume all responsibility to locate or to confirm the details and location of all utility services on or in the vicinity of the Site.

- Exercise the greatest care at all times to avoid damage to or interference with services.

- Assume responsibility for any damage and/or interference caused by him or his agents, directly or indirectly, arising from actions taken or a failure to take action, and for full restoration of the damage.

- Wherever existing ground surfaces are to be disturbed for construction of the Works, carry out full and adequate preliminary investigations to locate all services in the area by means of hand-dug trial holes and trenches in combination with electronic and electro-mechanical devices, where appropriate,. Each service thus exposed shall be identified. Every such service at risk shall be fully exposed and adequately protected and supported in situ or diverted to the satisfaction of the appropriate authority prior to the commencement of such construction.

- When working in the vicinity of overhead power cables, ascertain and satisfy himself about the safe clearances to be maintained from the power cables in consultation with the authority operating the power line. Where existing overhead power lines, communications cables or other major utilities require relocation, the Sub-Contractor will use the services of specialist enterprises with the necessary skills and technology to carry out the work.

APPENDIX B

APPENDIX B
GUIDELINES FOR LAND AND ASSET ACQUISITION, ENTITLEMENTS AND COMPENSATION

The following presents the Guidelines for Land and Asset Acquisition, Entitlements and Compensation drafted for use in the World Bank Afghanistan Emergency Infrastructure Project. Adaptation of the guidelines is recommended for incorporation in the Tarin Bridge Project and other projects included in the USAID Afghanistan Rehabilitation of Economic Facilities and Services (REFS) Program.

Guidelines for Land and Asset Acquisition, Entitlements and Compensation

I. Objectives

Land acquisition will be kept to a minimum and no person will be involuntarily displaced under subprojects financed by the proposed emergency reconstruction operations. Subproject proposals that would require demolishing houses or acquiring productive land should be carefully reviewed to minimize or avoid their impacts through alternative alignments. Proposals that require more than minor expansion along rights of way should be reviewed carefully. No land or asset acquisition may take place outside of these guidelines. A format for Land Acquisition Assessment is attached as Attachment 2(i).

These guidelines provide principles and instructions to compensate affected persons to ensure that all such persons negatively affected, regardless of their land tenure status, will be assisted to improve, or at least to restore, their living standards, income earning or production capacity to pre-project levels.

Categorization

Based on the number of persons that may be affected by the project (Project Affected People, PAPs) and the magnitude of impacts, projects may be categorized as S-1, S-2, or S-3 projects:

a. S-1 projects are those that will involve the resettlement of more than 200 PAPs and where a full Resettlement Action Plan (RAP) must be produced. Such interventions will be ineligible for support under the proposed emergency reconstruction operations.
b. S-2 projects are those which will involve the resettlement of less than 200 persons. In such cases, the following documentation is required: (1) a land acquisition assessment, (2) Minutes or record of consultations which assess the compensation claimed and agreement reached, and (3) a record of the receipt of the compensation, or voluntary donation, by those affected (see below).
c. S-3 projects are not expected to have any land acquisition or any other significant adverse social impacts; on the contrary, significant positive social impact and improved livelihoods are expected from such interventions.

II. Eligibility

PAPs are identified as persons whose livelihood is directly or indirectly affected by the project. PAPs deemed eligible for compensation are:

(1) those who have formal legal rights to land, water resources or structures/buildings, including recognized customary and traditional rights;

(2) those who do not have such formal legal rights but have a claim to usufruct right rooted in customary law;

(3) those whose claim to land and water resources or building/structures do not fall within(1) and (2) above, are eligible to assistance to restore their livelihood.

Acquisition of Productive Assets and Compensation

PAPs are eligible for replacement costs for lost assets as described below:

a. *Voluntary contributions*. In accordance with traditional practices, individuals may elect to voluntarily contribute land or assets and/or relocate temporarily or permanently from their land without compensation.
b. *Contributions against compensation*. A contributor/asset loser considered "affected" will be eligible for compensation from the local community or alternatively from the Government. A PAP shall lodge his/her claim for compensation to the local community representative/shura head and it shall be verified by the implementing agency. The claim shall be lodged within 2 weeks of completion of the consultations with the concerned community, and before project implementation begins.

Voluntary contribution, or contribution against compensation, should be documented. The documentation should specify that the land is free of any squatters, encroachers or other claims. A format is attached in Attachment 2(i), which includes a Schedule to be followed to assess any compensation claimed and the agreement reached.

III. Compensation Principles

The project implementing agencies shall ensure that any of the following means of compensation are provided in a timely manner to affected persons:

(1) Project affected persons losing access to a portion of their land or other productive assets with the remaining assets being economically viable are entitled to compensation at replacement cost for that portion of land or assets lost to them. Compensation for the lost assets will be according to following principles:

a. replacement land with an equally productive plot, cash or other equivalent productive assets;
b. materials and assistance to fully replace solid structures that will be demolished;
c. replacement of damaged or lost crops and trees, at market value;
d. other acceptable in-kind compensation;
e. in case of cash compensation, the delivery of compensation should be made in public, i.e. at the Community Meeting.

(2) Project affected persons losing access to a portion of their land or other economic assets rendering the remainder economically non-viable, will have the option of

compensation for the entire asset by provision of alternative land, cash or equivalent productive asset, according to the principles in (1) a-d above.

Consultation Process

The implementing agencies will ensure that all occupants of land and owners of assets located in a proposed subproject area are consulted. There will be gender separate community meetings for each affected mantaqa/gozar (urban infrastructure) or village (other projects) to inform the local population about their rights to compensation and options available in accordance with these guidelines. The minutes of the community meetings shall reflect the discussions held, agreements reached, and include details of the agreement based on the format provided in Attachment 2(ii).

The implementing agency shall provide a copy of the minutes to affected persons and confirm in discussions with each of them their requests and preferences for compensation, agreements reached, and any eventual complaints. Copies will be recorded in the posted project documentation and be available during supervision.

Subproject Approval

In the event that a subproject involves acquisition against compensation, the implementing agency shall:

a) Not approve the subproject unless a satisfactory compensation has been agreed between the affected person and the local community;
b) Not allow works to start until the compensation has been delivered in a satisfactory manner to the affected persons;
c) If more than 200 persons are affected and require compensation, the subproject shall be deemed ineligible for support under the emergency reconstruction operations.

Complaints and Grievances

All complaints should first be negotiated to reach an agreement at the local community/village level. If this fails, complaints and grievances about these guidelines, implementation of the agreements recorded in the community meeting minutes or any alleged irregularity in carrying out the project can also be addressed by the affected persons or their representative at the municipal or district level. If this also fails, the complaint may also be submitted to the relevant implementing agency for a decision.

Verification

The community meeting minutes, including agreements of compensation and evidence of compensation having been made shall be provided to the municipality/district, to the supervising engineers, who will maintain a record hereof, and to auditors and socio-econimic monitors when they undertake reviews and project post-assessment. This process shall be specified in all relevant project documents, including details of the relevant authority for complaints at municipal/district or implementing agency level.

Attachment 2(i)

Land Acquisition Assessment Data Sheet

(To be used to record information on all land to be required)

1. Quantities of land/structures/other assets required:

2. Date to be acquired:

3. Locations:

4. Owners:

5. Current Uses:

6. Users:

   - Number of Customary claimants:
   - Number of squatters:
   - Number of encroacher:
   - Number of owners:
   - Number of tenants:
   - Others (specify): Number:

7. How land/structures/other assets will be acquired (identify one):

   - Donation
   - Purchase

8. Transfer of title:

   - Ensure that these lands/structures/other assets free of claims or encumbrances
   - Written proof must be obtained (notarized or witnessed statements) of the voluntary donation, or acceptance of the prices paid, from those affected together with proof of title being vested in the community, or guarantee of public access, by the title holder.

9. Describe grievance mechanisms available:

Attachement 2(ii)

Format to Document Contribution of Assets

The following agreement has been made on……..day of……between…….resident of ……..(the owner) and …….(the recipient).

1. That the owner holds the transferable right of ……..jerib of land/structure/asset
in……

2. That the owner testifies that the land/structure is free of squatters or encroachers and not subject to other claims.

3. That the owner hereby grants to the recipient this asset for the construction and development of …….for the benefit of villagers and the public at large.

(Either, in case of donation :)

4. That the Owner will not claim any compensation against the grant of this asset

(Or, in case of compensation :)

5. That he Owner will receive compensation against the grant of this asset as per the attached Schedule.

6. That the Recipient agrees to accept this grant of asset for the purposes mentioned.

7. That the Recipient shall construct and develop the ……... and take all possible precautions to avoid damage to adjacent land/structure/other assets.

8. That both the parties agree that the ……..... so constructed/developed shall be public premises.

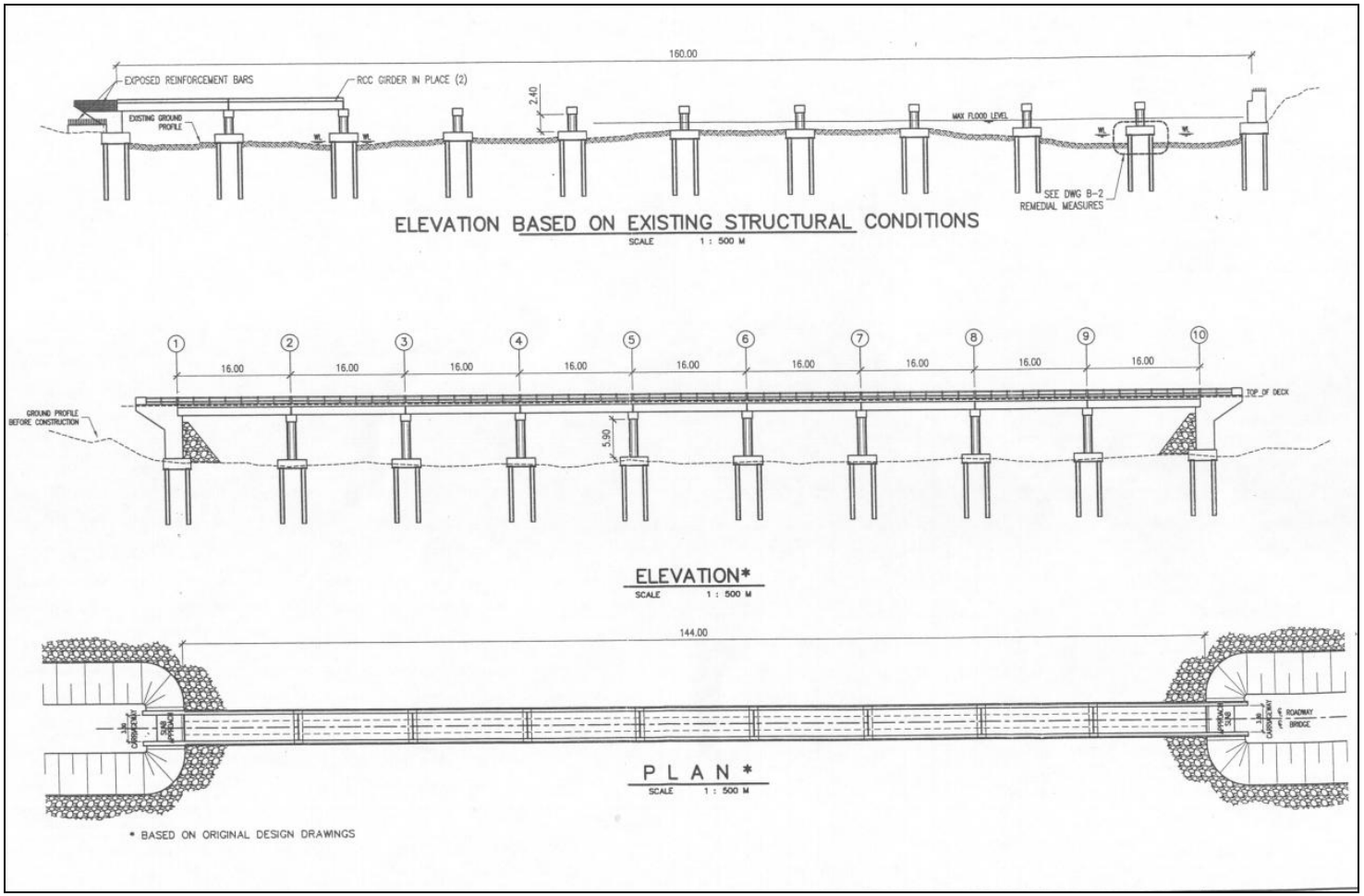
9. That the provisions of this agreement will come into force from the date of signing of this deed.

_____ _____
Signature of the Owner: Signature of the Recipient:

Witnesses:
1._____
2._____
(Signature, name and address)

APPENDIX C

CONCEPTUAL DESIGN DRAWINGS



APPENDIX D

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APPENDIX E

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